

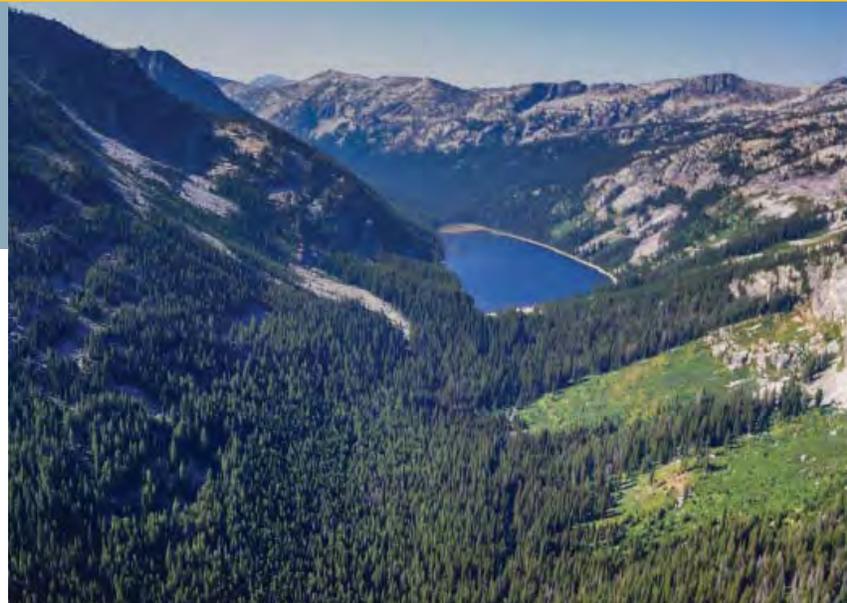


# Funding Examples of Major Dam and Canal Infrastructure Projects in Montana



**July 2015**

Prepared by:



# Table of Contents

<b>Introduction.....</b>	<b>1</b>
<b>Case Studies (Dams) .....</b>	<b>2</b>
Ackley Lake Dam Rehabilitation.....	2
Carter Ponds Rehabilitation .....	4
Deadman’s Basin Terminal Outlet Replacement.....	6
Flowers Creek Dam Improvements .....	8
Lake Frances East Dam Rehabilitation – Phase I & II .....	10
Middle Creek Dam Sinkhole Repair.....	12
Mill Lake Dam Rehabilitation .....	14
Ruby Dam Rehabilitation - Phase 1 & 2.....	16
Smith Lake Dam Reconstruction .....	18
Tin Cup Dam Repairs .....	20
<b>Case Studies (Canals) .....</b>	<b>22</b>
Delphia Canal Inverted Siphon.....	22
East Fork Rock Creek Diversion & Fish Screen .....	24
Improving Fort Shaw Irrigation District Water Efficiency.....	26
Hedge Canal Diversion Dam Project - Phase I & II .....	28
Little Prickly Pear Creek Irrigation Improvements .....	30
Lost Horse Creek Siphon .....	32
Orchard Homes Ditch Intake Improvements .....	34
Stony Creek Diversion & Fish Screen.....	36
Two Dot Canal Rehabilitation Project.....	38
Increasing Sidney Water Users Irrigation District Irrigation Efficiency .....	40
<b>Funding Sources.....</b>	<b>42</b>

# INTRODUCTION

This guide is intended to provide several examples of and information to dam owners, irrigators, and other interested parties of the funding mechanisms available for larger scale dam and canal projects within the State of Montana.

The starting point for getting a new potential project off the ground is to ensure a sound understanding of what will be accomplished. Perhaps, if not previously completed, an engineering or feasibility analysis is required to determine the necessary repairs or rehabilitations. It is important to have solid background information and preliminary engineering (if necessary) to define the size and scope of the project. If rigorous project background work and cost estimation is not completed prior to funding being secured, the results may lead to project abandonment or significantly higher costs than expected. It is very challenging to obtain additional funding from the grant or loan agency after initial funding is secured.

Regardless of the project, agency or funding office staff are generally available for assistance and it is advisable to contact and coordinate during preparation of any funding applications. Contacting the appropriate funding representative can be helpful to those unfamiliar with the process. See the Funding Sources Section of this document for a list of contact information. The DNRC also has a pre-qualified list of consultant engineers specializing in dam and irrigation projects who are knowledgeable in a wide variety of improvements, repairs and rehabilitations.

Once a solid preliminary plan has been developed, investigations into the vast array of funding sources can occur. Assistance in probing the multitude of funding sources can be obtained from several entities: engineering consultant, conservation district, DNRC or a non-profit. Often, if the dam owner/irrigator is a private company or individual, a conservation district may apply for certain grants on their behalf. Knowledgeable individuals familiar with funding sources, applications, and management of grants/loans are crucial to project success, as many of these funding sources have significant coordination, documentation and audits involved. A comprehensive list of available funding agencies and specific contacts for dam and canal improvements in Montana is shown in the Funding Sources Section of this document.

To illustrate the use of funding for a variety of dam and irrigation projects throughout Montana, numerous case studies have been prepared to give readers “real world” examples of the creative ways funding is secured for specific project and ownership types.

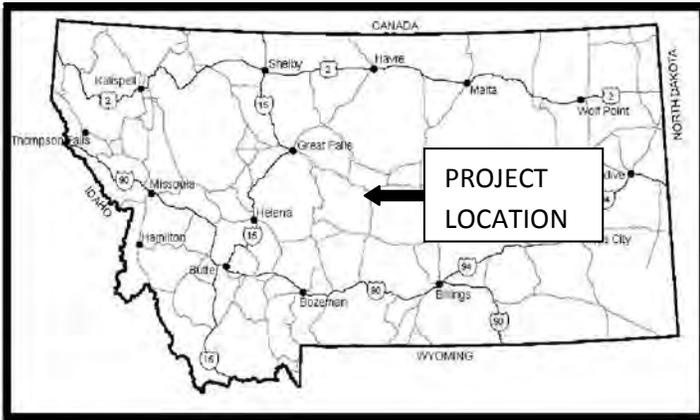
## **CASE STUDIES: DAMS**

# ACKLEY LAKE DAM REHABILITATION (2009)

## DNRC

### Ackley Lake Dam History

- Earthen dam constructed in 1938
- Off-stream reservoir with canal from Judith River
- Dam owned by DNRC, operated/maintained by Ackley Lake Water Users Association since 1938
- Primary purpose(s): Irrigation, recreation, Ackley Lake State Park – northern half of reservoir
- Dam Height: 51 feet
- Dam Storage: 6,722 acre-feet
- Dam Classification: High Hazard



### Project History

After initial construction of the dam, a slide developed on the left side of the outlet near the toe of the dam. The outlet conduit was extended 120 feet and additional drainage was installed in an attempt to stabilize the slide. Investigative drilling in 1999 revealed high artesian pressures at the toe of the dam and in 2004 a seepage exit was observed to be transporting small quantities of fine grained material. Further analysis revealed that the dam did not meet stability requirements. A rehabilitation project was initiated to address the high uplift pressures, improve spillway performance and to line the aged, corrugated metal pipe outlet.



View of reservoir drawdown and cofferdam.  
Photo courtesy of DNRC.

### Work Breakdown

- Installation of toe drains
- Construction of a toe berm to protect against high artesian pressure
- Outlet conduit lining and extension to accommodate stability berm
- Installation of articulated concrete block primary spillway crest structure
- Leveling of dam crest
- Construction of auxiliary spillway
- New Gatehouse

# ACKLEY LAKE DAM REHABILITATION (2009)

## DNRC

### Project Funding

The total cost of the project was **\$1.6 Million**. To finance the project, the DNRC used the following grant and loan programs:

- DNRC RRGL Grant: \$100,000
- DNRC RRGL Loan: \$200,000
  - 20 years @ 4.5%
  - To be repaid by WUA
- State funds: \$1.3 Million
  - Only utilized on SWP owned projects
- Ackley Lake Water Users Association:
  - Increase in water users fees due to loans



View of new RCP installation at outlet.  
Photo courtesy of DNRC

### Project Status & Results

- Construction began in 2008 and was completed in 2009

### Project Partners

Owner: DNRC

Lead Design Engineer: DOWL

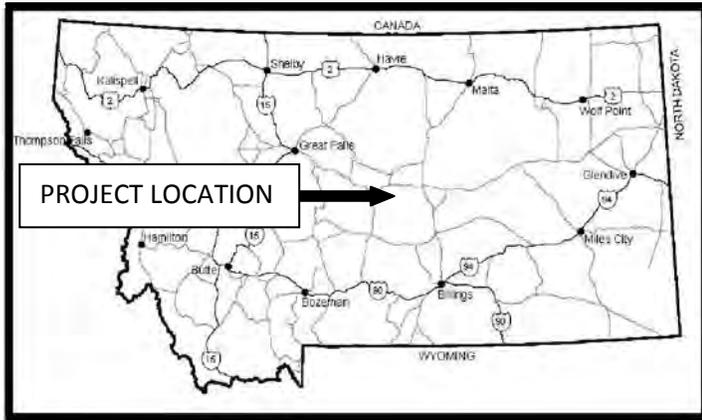
Prime Contractor: Mungas Company Inc.



View of completed terminal outlet & gatehouse.  
Photo courtesy of DNRC

# CARTER PONDS REHABILITATION (2008)

## TOM CARTER



### Carters Pond History

- 2 ponds (Upper and Lower) constructed in 1938
- Original purpose was for irrigation/agriculture use
- Primary current purposes: Recreation, fishing, wildlife habitat, agricultural use, MFWP access site
- Dam Height: 22 feet (Lower), 17 feet (Upper)
- Dam Storage (acre-feet): 176 (Lower), 119 (Upper)
- Dam Classification: Not High Hazard

### Project History

The Carter Ponds have been rebuilt several times over their history due to the short lifespan of metal conduit. In 2001, DNRC completed an assessment of the Carter Ponds and a hazard classification was established as “not high hazard”. However, in 2004, the trickle tube at the lower Carter Pond collapsed and the conduit in the upper Carter Pond exhibited a slow failure due to conduit pipe corrosion. DNRC recommended that the dams either be repaired or breached. In 2006, it was determined to look for funding implementation for the project. After analysis and alternatives exploration, it was determined that a full rebuild of both dams was the preferred alternative.



Aerial of upper Carter Pond (2004).  
Photo courtesy of MFWP

### Work Breakdown

- Replace principle spillway and operating conduits
- Rebuild dam crest
- Provide slope protection with riprap installation at dam face
- Provide toe drain for dam



View of trickle tube failure in lower pond.  
Photo courtesy of MFWP

# CARTER PONDS REHABILITATION (2008)

## TOM CARTER

### Project Funding

The total cost of both projects was **\$430,635**. To finance the project, Tom Carter and the project partners used the following grant programs and in-kind work:

- Montana FWP-Future Fisheries Grant - \$106,000
  - Utilized future fisheries monies based on the preservation of a fishing resource
- DNRC RRGL Grant: \$100,000
- NRCS, USFWS: \$25,200
- North American Wetlands Conservation Act (NAWCA) Small Grant: \$75,000
  - Provided funding based on use of ponds by migratory birds for habitat management
- Ducks Unlimited: \$85,000
  - Provided engineering for the project
- USFWS: \$36,435 in-kind
  - Utilized for rock sourcing and placement
- Fergus Conservation District provided in-kind assistance consisting of grant writing



Construction of lower pond crest (2008).  
Photo courtesy of MFWP

### Project Status & Results

- Both projects were successfully completed in 2008 and the ponds were completely filled in 2010.

### Project Partners

Owner: Tom Carter, with assistance from MFWP

Engineer: Ducks Unlimited

Contractor: Martin Excavating LLC.



View of lower pond (2010).  
Photo courtesy of MFWP

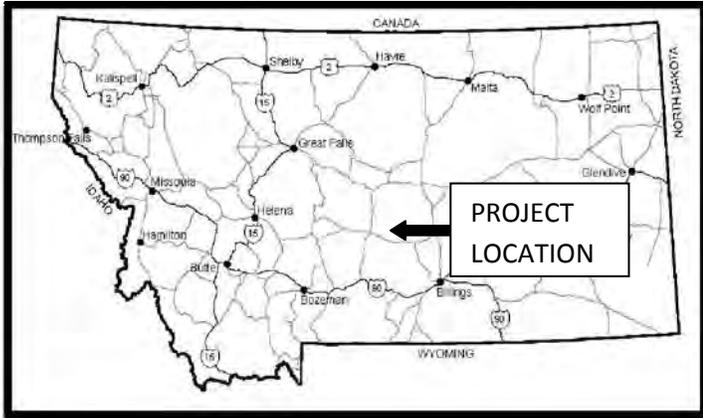


View of completed upper pond (2009).  
Photo courtesy of MFWP

# DEADMAN'S BASIN TERMINAL OUTLET REPLACEMENT (2010)

## DNRC

### Deadman's Basin Dam History



- Earthen dam constructed in 1941, raised in 1958
- Off-stream reservoir with canal from the Musselshell River
- Dam owned by DNRC, operated/maintained by Deadman's Basin Water Users Association
- Primary purpose: Irrigation, municipal & recreation.
- Dam Height: 60 feet
- Dam Storage: 72,218 acre-feet
- Dam Classification: High Hazard

### Project History



View of dam seepage.  
Photo courtesy of DNRC

Annual inspections reported numerous issues with the dam and outlet structure including: seepage, erosion behind the outlet structure and outlet structure deterioration. In 2003, the DNRC performed seepage modeling on the dam and found that high uplift pressures existed at the dam toe and the exit gradient of seepage did not meet Montana Dam Safety Act Standards. Additional analysis completed by the engineering consultant found that a toe berm and filter significantly increased the factor of safety, rendering the dam compliant to Montana Dam Safety Act Standards. It was decided to move forward with improvements and investigate funding sources for the project.

### Work Breakdown

- Extending the terminal outlet
- Installation of a filtration and drainage system
- Construction of a toe berm
- Canal armoring, articulated concrete blocks
- Reclamation and erosion control



Demolition of existing outlet structure (2009).  
Photo courtesy of DNRC

# DEADMAN'S BASIN TERMINAL OUTLET REPLACEMENT (2010)

## DNRC

### Project Funding

The total cost of the project was **\$780,000**. To finance the project, the DNRC used the following grant and loan programs:

- DNRC RRGL Grant: \$100,000
- DNRC RRGL Loan: \$400,000
  - 20 years @ 4.5%
  - To be repaid by WUA
- State Funds: \$280,000
  - Only utilized on SWP owned projects
- DNRC In-kind work



View of precast conduit placement (2009).  
Photo courtesy of DNRC

### Project Status & Results

- Construction began in October 2009 and was completed in May 2010
- Articulated concrete block failure in October 2010. Was replaced with AJAX system, which is working well.

### Project Partners

Owner: DNRC

Lead Design Engineer: WWC Engineering

Prime Contractor: Montana Civil Contractors, Inc.

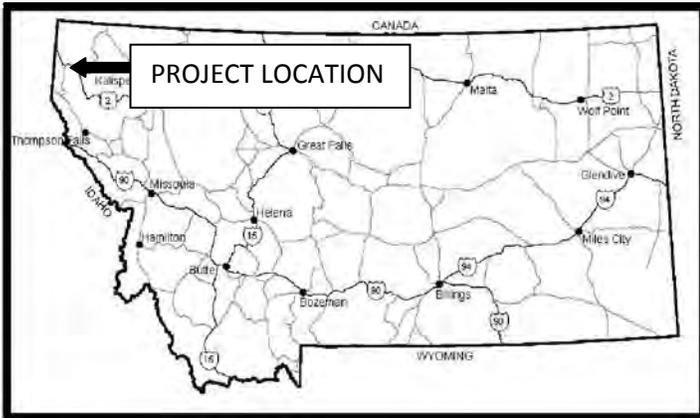
Construction Oversight: DNRC



View of completed terminal outlet structure (2012).  
Photo courtesy of DNRC.

# FLOWERS CREEK DAM IMPROVEMENTS (ONGOING)

## CITY OF LIBBY



### Flowers Creek Dam History

- Concrete dam constructed in 1946 for Pacific Power & Light Company. City of Libby purchased dam in 1986.
- Primary purpose: City of Libby Municipal water
- Dam Height: 59 feet
- Dam Storage: 285 acre-feet
- Dam Classification: High Hazard

### Project History



Flowers Creek Dam prior to replacement.  
Photo courtesy of Morrison-Maierle

Since originally constructed, the dam has exhibited significant leakage on the dam face through numerous construction joints, resulting in considerable carbonation and iron leachate buildup. This was likely from substandard original concrete with high water-to-cement ratio. The dam was repaired in 1966 in areas of the upstream and downstream face with higher quality concrete. In 1995, a synthetic liner was installed on the upstream face to reduce the seepage. In 2009, an inspection revealed seepage was becoming more of a problem. The DNRC recommended that the City perform core drilling to determine concrete strength. Numerous core samples were taken in 2010 and the results of the sampling showed that the effective strength of the concrete was less than 1000 psi which resulted in a risk

of failure during seismic events or if the reservoir level is cycled or drained. As a result of the findings, the City of Libby began a substantial effort to analyze the existing dam, and looked at numerous alternatives for water sources and water storage for the City. Over a several year effort, it was decided to replace the existing dam with a new concrete gravity structure downstream of the existing dam.

### Work Breakdown

- Lower reservoir
- Downstream cofferdam construction
- Existing dam demolition
- Construction of new mass-concrete gravity dam



Flowers Creek Dam Removal (March 2015).  
Photo courtesy of Morrison-Maierle

# FLOWERS CREEK DAM IMPROVEMENTS (ONGOING)

## CITY OF LIBBY

### Project Funding

The total cost of the project is **\$11,511,000**. To finance the project, the City of Libby used numerous grant and loan programs. Acquisition of grants and loans were obtained with assistance by the lead engineering consultant:

- USDA RD Loan: \$3,690,000
- USDA RD Grant: \$5,140,000
  - RD Loan/Grants are project dependent and are proportional largely based on population and median household income. The terms of the loan included a 40 year repayment at a 3.25% interest rate.
- Department of Commerce - TSEP Construction Grant: \$750,000
  - Required 100% Match (Cash, Loan, Other Grants)
- Department of Commerce – CDBG Grant: \$450,000
  - Requires 25% Match (Cash, Loan, Grants, In-Kind Work)
- DNRC RRGL Grant: \$100,000
- DNRC RRGL Loan: \$800,000
  - The terms of the loan included a 20 year repayment at a 3.00% interest rate.
- City of Libby: \$581,000
  - In-kind (administration), preliminary engineering and design engineering fees.



Rock excavation at abutment (April 2015)  
Photo Courtesy of Morrison-Maierle

### Project Status & Results

- Construction began in December 2014 with drawdown of reservoir
- Project is anticipated to be substantially complete in November 2015
- Due to size and scale of project, numerous permits, authorizations, licenses and acts needed to be acquired and/or met prior to construction occurring
- Public outreach and involvement has been crucial for support of the project



Dewatered reservoir (May 2015)  
Photo courtesy of Morrison-Maierle

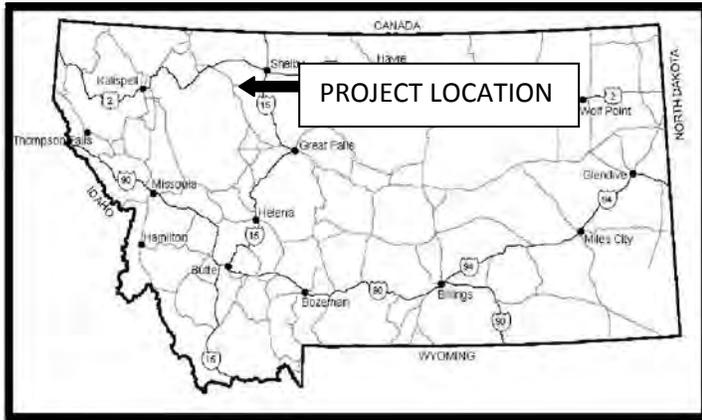
### Project Partners

Owner: City of Libby

Lead Design Engineer: Morrison-Maierle

Prime Contractor: Johnson-Wilson Constructors, Inc.

# LAKE FRANCES EAST DAM REHABILITATION – PHASE I & II (2008) PONDERA COUNTY CANAL AND RESERVOIR COMPANY (PCCRC)



## Lake Frances East Dam History

- Earth embankment dam constructed 1908-1910
- Primary purposes: Irrigation, municipal water for City of Conrad, recreation, fishing
- Dam Height: 57 feet
- Dam Storage: 105,000 acre-feet (approx.)
- Dam Classification: High Hazard

## Project History

Since initial construction in 1910, the Lake Frances East Dam has had an interesting history. During initial filling in 1908, the outlet works experienced significant settlement. A repair plan was developed consisting of a new tower and grouting outlet cracks and improvements that were completed in 1913. In 1922, seepage at the left abutment caused a large hole in the downstream toe. Drains and a berm were installed, but it is unknown if grouting was conducted.

The dam was inspected in 1998 and had subsequent stability analyses completed. Results of this investigation found that the discharge at the outlet works was limited to 400-500 cfs, or about half the design capacity, due to the outlet conduit deterioration. Additionally, the outlet works did not meet current dam safety criteria. In 2002, extensive grouting was completed to seal voids in the earth embankment. In 2003, the outlet conduit and gate tower's concrete condition was evaluated and deemed that the outlet could be rehabilitated. A two phase rehabilitation approach was utilized for the project.

## Work Breakdown

### **Phase I**

- Earth berm on downstream face removed to allow installation of filter sand around conduit
- Internal chimney drain constructed of filter sand was installed over entire embankment length

### **Phase II**

- Removal of outlet conduit upstream of cutoff wall and removal of free standing lake tower
- New control tower on upstream face of cutoff wall
- New conduit from new tower to upstream toe of dam
- More extensive grouting program along length of cutoff wall



View of upstream portion of dam excavated to concrete corewall (Phase II).

Photo courtesy of DNRC

# LAKE FRANCES EAST DAM REHABILITATION – PHASE I & II (2008)

## PONDERA COUNTY CANAL AND RESERVOIR COMPANY (PCCRC)

### Project Funding

The total cost of the project was **\$3,430,000**. To finance the project, PCCRC used the following loan programs and completed most of the construction with their own crews and heavy equipment.

- Private loan: \$3,425,000
  - Used water rights as collateral
- PCCRC-In Kind Work
- Private Grant: \$5,000

### Project Status & Results

- Phase I construction was completed in fall 2006
- Phase II construction was completed in 2008
- Dewatering was a challenge for Phase II work and required the use of pump consultant (unforeseen)



Dewatering and work at upstream face (Phase II).  
Photo courtesy of DNRC

### Project Partners

Owner: PCCRC

Engineer: DOWL

Contractor: Construction largely completed by PCCRC employees. Construction of the control tower was completed by a contractor.

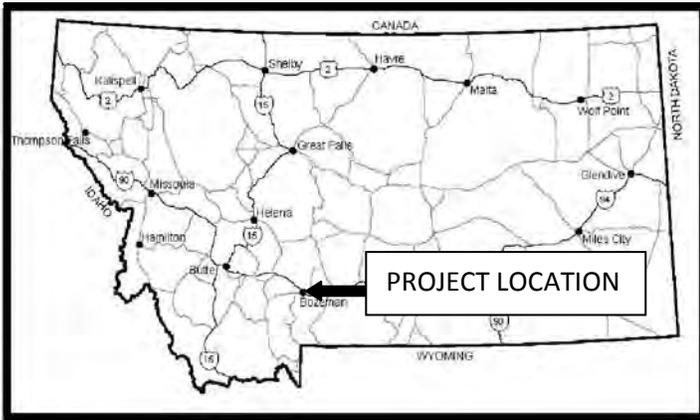
Construction Inspection: DOWL



View of new control tower (Phase II).  
Photo courtesy of DNRC

# MIDDLE CREEK DAM SINKHOLE REPAIR – (2006)

## DNRC



### Middle Creek Dam History

- Middle Creek Dam (aka Hyalite) constructed in 1951
- Owned by DNRC, Managed by SWPB under USFS Special Use Permit, operated by Middle Creek Water Users Association
- Primary purpose: Irrigation, downstream municipal water for City of Bozeman, recreation, fishing
- Dam Height: 125 feet
- Dam Storage: 10,184 acre-feet
- Dam Classification: High Hazard

### Project History



View of Middle Creek Dam.  
Photo courtesy of DNRC

The Middle Creek Dam was originally constructed in 1951 and had relatively minor improvements until a significant project was completed in 1992. This project consisted of raising the dam embankment and gate tower 10 feet, constructing a new spillway and making improvements to the drainage and seepage monitoring system. Funding for this project was through a federal loan.

In August of 2006, a seepage entry location was discovered in the upstream left abutment near the auxiliary spillway. A repair plan was immediately identified and construction occurred immediately.

### Work Breakdown

- Test excavations
- Sinkhole excavation
- Extension of protective liner



Earthwork surface preparations for protective liner.  
Photo courtesy of DNRC

# MIDDLE CREEK DAM SINKHOLE REPAIR – (2006)

## DNRC

### Project Funding

The total cost of the project was **\$88,000**. To finance the emergency repairs, the following funding was utilized:

- RRGL Emergency Grant: \$30,000
  - Allocated based on the emergency condition of the sinkhole
- Middle Creek Water Users: \$20,000
  - Paid using cash reserves
- State Funds: \$38,000
  - Only utilized on DNRC owned projects



Installation of protective liner.  
Photo courtesy of DNRC

### Project Status & Results

- Emergency repairs were complete in October 2006.

### Project Partners

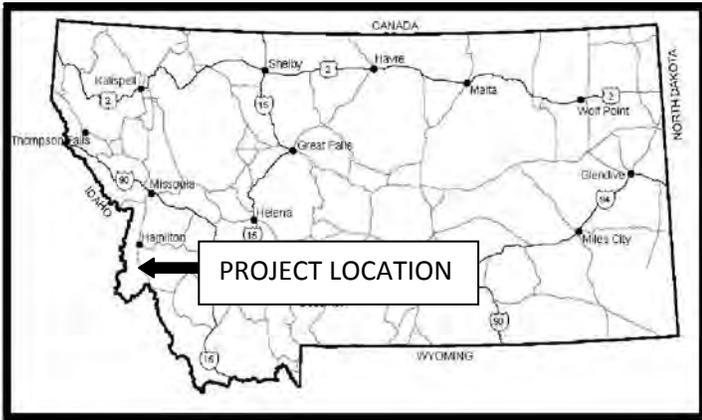
Owner: DNRC

Engineer: DNRC

Contractor: Martin Excavating

# MILL LAKE DAM REHABILITATION (2009)

## MILL CREEK IRRIGATION DISTRICT (MCID)



### Mill Lake Dam History

- Earthfill dam with rock shell, originally constructed in 1912.
- Dam located in the Selway-Bitterroot Wilderness
- Primary purposes: Irrigation, fishing
- Dam Height: 25 feet (approx.)
- Dam Storage: 780 acre-feet
- Dam Classification: High Hazard

### Project History

Since construction, the dam has had numerous rehabilitation projects, including major rehabilitation in 1922, 1944, 1959, 1960, 1961, 1964, 1991 and 1992. Recently, the dam has had some serious concerns and in 2001, an emergency repair was completed and funded by a DNRC grant. In 2002, temporary slip lining of the outlet pipe occurred. In 2005, permanent slip lining was completed on the outlet pipe, funded by a DNRC grant. In 2007, a rehabilitation project (Phase I) was completed which consisted of rock berm construction, downstream dam crest edge stability construction, and AMCi® satellite alarm system. This rehabilitation was paid for by the Mill Creek Irrigation District. To complete the final phase of rehabilitation, the District looked for assistance from loans.



Mill Lake Dam (1930).  
Photo courtesy of MCID

### Work Breakdown

- Rock removal & stockpile
- Slope stabilization
- Impermeable liner installation
- Rock installation
- Downstream seepage filter
- Spillway rehabilitation



Installation of liner and rock (2009).  
Photo courtesy of Hydrometrics

# MILL LAKE DAM REHABILITATION (2009)

## MILL CREEK IRRIGATION DISTRICT (MCID)

### Project Funding

The total cost of the project was **\$603,726**. To finance the project, the Mill Creek Irrigation District used the following loan program:

- DNRC WDL: \$600,000
  - Terms were at 3.5% interest for 20 years.
  - Rates were raised in preparation for the loan
  - Irrigators within the district have been satisfied with the project; lots of smaller irrigators, therefore, cost increases haven't been impractical
  - Temporary loan was needed due to allowing contractor to purchase materials because of the tight construction window



Installation of rock on dam face, note conveyor (2009).  
Photo courtesy of Hydrometrics

### Project Status & Results

- The final phase was completed in 2009
- No water storage occurred in 2009 due to drawdown
- 90 day work schedule
- Working inside the wilderness required close coordination with the USFS, additional permitting and environmental analysis
- Have a well thought out plan-of-attack prior to construction to demonstrate project knowledge and means and methods of construction at a remote work site.



View of completed work.  
Photo courtesy of Hydrometrics

### Project Partners

Owner: Mill Creek Irrigation District

Lead Design Engineer: Hydrometrics

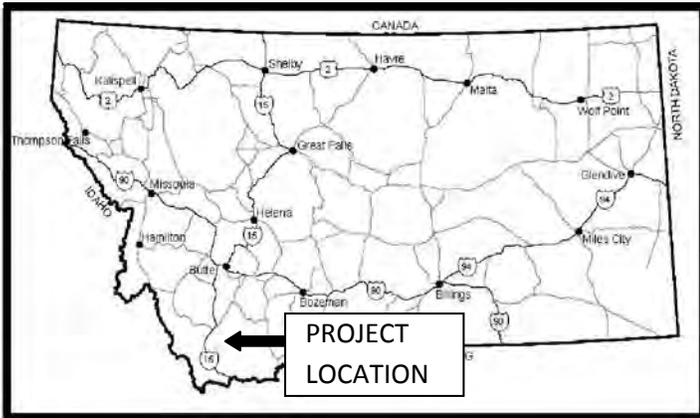
Prime Contractor: Land Tech Montana Inc.

# RUBY DAM REHABILITATION PHASE 1 & 2 (2011 & 2014)

## DNRC

### Ruby Dam History

- Earthen embankment dam built in 1938, by State Water Conservation Board
- Dam owned by DNRC, operated and maintained by Ruby Water Users Association since 1938
- Primary purpose(s): Irrigation, recreation, stream flow regulation
- Dam Height: 113 feet
- Dam Storage: 37,642 acre-feet
- Dam Classification: High Hazard



### Project History

Past dam inspections noted significant concrete deterioration in the spillway floors, joints and walls. There was the potential for both erosion of the spillway foundation and uplift of the spillway slabs due to seepage. Additionally, the operating gate was prone to cavitation damage and incapable of meeting reservoir evacuation criteria.

A feasibility study to evaluate rehabilitation alternatives was completed in 2007 and funded by the DNRC. After this study and other analyses, specific rehabilitation efforts were determined. Rehabilitation was accomplished in two phases, due to the large size of the project.

### Work Breakdown

#### Phase 1

- Replacing spillway
- Development of maintenance access road

#### Phase 2

- New outlet works conduit
- New operating and guard gates
- New gate house



View of Ruby Dam spillway prior to rehabilitation.  
Photo courtesy of DNRC



"Roostertails" caused by concrete deterioration.  
Photo courtesy of DNRC

# RUBY DAM REHABILITATION PHASE 1 & 2 (2011 & 2014)

## DNRC

### Project Funding

The total cost of the project was **\$17.1 Million**. To finance the project, the DNRC used the following programs:

- DNRC RRGL Grant: \$100,000
- DNRC RRGL Loans:
  - \$4 Million, 15 years @ 4.5%
    - To be repaid by SWP
  - \$2 Million, 15 years @ 3.5%
- DNRC RRGL Loan: \$2 Million
  - 20 years @ 4.5%
  - To be repaid by Ruby Water Users Association
    - Rate increases were necessary for water users which roughly quadrupled previous rates.
    - Overall, the water users association was pleased with the end result of the project.
- State Funds: \$9 Million
  - Only available to SWP owned facilities



View of completed labyrinth weir spillway & bridge.  
Photo courtesy of DNRC

### Project Status & Results

- Phase 1 of the project began in August of 2010 and was complete in December 2011.
- Phase 2 of the project began in 2013 and was substantially complete in summer of 2014.

### Project Partners

Owner: DNRC

Lead Design Engineer: AECOM (URS)

Prime Contractor: Johnson-Wilson Constructors

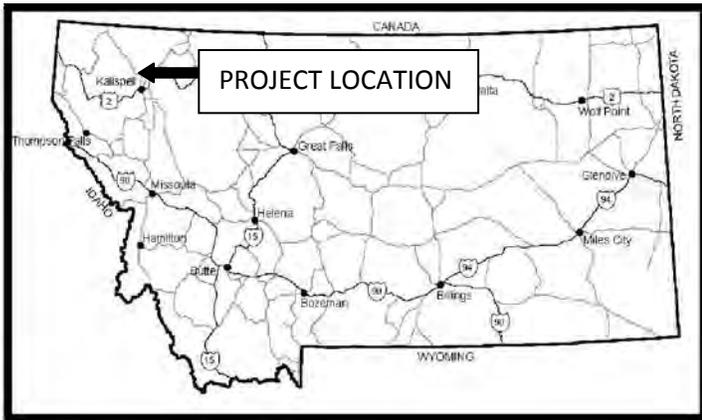
Construction Oversight: AECOM (URS), DNRC



View of completed outlet works.  
Photo courtesy of DNRC

# SMITH LAKE DAM RECONSTRUCTION (2012)

## DNRC



### Smith Lake Dam History

- Constructed in 1937 on a natural lake
- FWP rebuilt dam in 1940's, fish were reared for research and stocking programs until late 1960's
- Primary purposes: Recreation, fishing
- Dam Height: 12 feet
- Dam Storage: 125 acre-feet
- Dam Classification: High Hazard

### Project History

In 2000, the DNRC classified the Smith Lake dam as “high-hazard” and in 2001, the DNRC completed recommendations of actions to reduce the risk of dam failure. In 2005, the DNRC took action to lower the dam’s risk until full rehabilitation could be completed, which included: tree removal, debris removal, cover installation over spillway structure and flashboard removal to lower lake level. In the fall of 2011, the DNRC was awarded two grants that would reconstruct the Smith Lake Dam.

### Work Breakdown

- Dewatering of Smith Lake
- Removal of concrete spillway
- Construction of new embankment
- Construction of new rock lined spillway
- Removal of stream diversion structure
- Hydroseeding
- Log boom (debris containment)



Spillway with stop logs (2000).  
Photo courtesy of DNRC

# SMITH LAKE DAM RECONSTRUCTION (2012)

## DNRC

### Project Funding

The total cost of the project was **\$145,449**. To finance the project, the DNRC used the following grant programs and in-kind work:

- DNRC RRGL Grant: \$100,000
  - Grant secured through the RRGL program
- DNRC In-Kind: \$22,769
  - DNRC provided in-kind services, largely consisting of rock talus borrow site for spillway construction and construction of the log boom
- Montana FWP Future Fisheries Program: \$22,680
  - Future Fisheries participated in this project because it allowed the lake to return to full pool, which assisted in the cutthroat trout fishery habitat
- Trout Unlimited assisted in trout stocking efforts after construction was complete



Drawdown of Smith Lake (2012).  
Photo courtesy of DNRC

### Project Status & Results

- Project successfully completed in 2012.

### Project Partners

Owner: DNRC

Engineer: Allied Engineering Services, Inc.

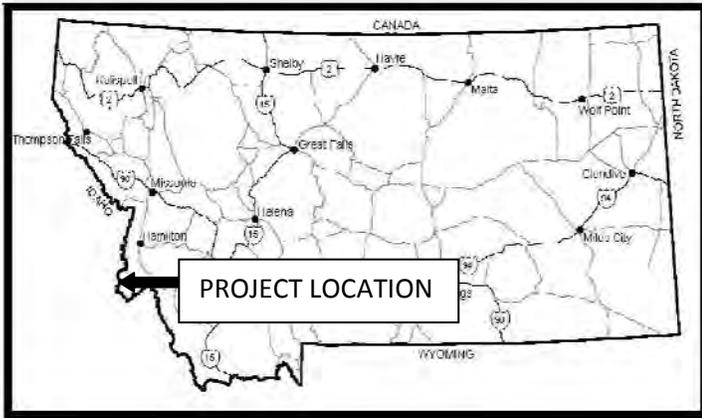
Contractor: Glacier Excavating Inc.



View of rock lined spillway and new embankment (2012).  
Photo courtesy of DNRC

# TIN CUP DAM REPAIRS (2011)

## TIN CUP COUNTY WATER AND SEWER DISTRICT (TCCWSD)



### Tin Cup Dam History

- Earth and rock embankment dam built in 1906
- Dam located in Selway-Bitterroot Wilderness
- Primary purposes: Irrigation, fishing
- Dam Height: 25 feet
- Dam Storage: 911 acre-feet
- Dam Classification: High Hazard

### Project History



View of Tin Cup Lake.  
Photo courtesy of Clark Fork Coalition

Since original construction, the dam has had numerous rehabilitation and repair projects. In 1932, the dam was raised to 25 feet from the original 20 foot construction height. In 1998, excessive seepage near the outlet pipe prompted the County to declare a state of emergency, which resulted in dam crest and spillway modifications. In July of 2003, an overtopping event occurred in a notched section of the dam and a sinkhole developed. Analysis of the dam spillway indicated that the spillway was not able to evacuate water efficiently enough to prevent overtopping. In August of 2003, TCCWSD's decided to complete emergency stabilization, which consisted of breach repair. In 2009, a satellite control outlet gate was installed. In around 2006, TCCWSD made

the decision to perform substantial repairs to the dam to restore storage capacity, increase spillway capacity, rehabilitate the earth embankment and bring the dam up to current safety standards. Through a period of 4 years, partnerships were acquired and funding sources were obtained. The Clark Fork Coalition was the primary project partner for securing funding resources for the dam improvements.

### Work Breakdown

- Rock removal & stockpile
- Slope stabilization
- Impermeable liner & geotextile fabric installation
- Rock installation
- Spillway modifications
  - Concrete footing, concrete wall and outlet works

# TIN CUP DAM REPAIRS (2011)

## TIN CUP COUNTY WATER AND SEWER DISTRICT (TCCWSD)

### Project Funding

The total cost of the project was **\$400,000**. To finance the project, the TCCWSD utilized the following funding programs:

- Columbia Basin Water Transactions Program (CBWTP): \$300,000
  - CBWTP provides assistance to the Columbia Watershed basin for streams that harbor chronic low flows which limit fish survivability. They purchased 400–acre-feet of stored water in the lake for 99 years to ensure year round in-stream flow in Tin Cup Creek, which went towards the dam repairs.
- MT FWP Future Fisheries Grant: \$100,000
  - Provided grant funding to assist in dam rehabilitation to ensure year round in-stream flow in Tin Cup Creek, as part of the FWP's long term plan of restoring and enhancing fisheries habitats that have been degraded.
- Clark Fork Coalition acted as agent on the project
- TCCWSD in-kind work included salaries

### Project Status & Results

- Construction began in August of 2011 and was completed in November 2011.
- Accelerated work schedule due to extreme weather conditions
- Working inside the wilderness required close coordination with the USFS, additional permitting and environmental analysis, especially with proposed helicopter use
- All interests need to be on board and public support is very important
- Have a well thought out plan-of-attack prior to construction to demonstrate project knowledge and means and methods of construction at a remote work site

### Project Partners

Owner: Tin Cup Water and Sewer District

Design Engineer: Hydrometrics

Prime Contractor: Patterson Enterprises



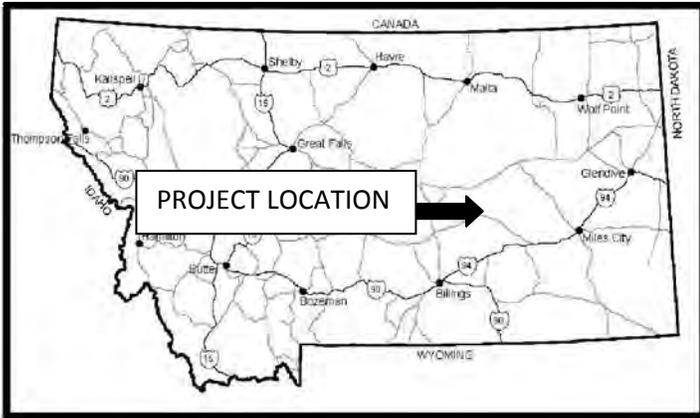
View of completed rebuild (2011).  
Photo courtesy of TCCWSD

## **CASE STUDIES: CANALS**

# DELPHIA CANAL INVERTED SIPHON (2012)

## DELPHIA-MELSTONE WATER USERS ASSOCIATION (DMWUA)

### Delphia-Melstone Water Users Association History



- Infrastructure completed in 1952 and funded by the Montana State Water Conservation Board
- DMWUA formed in 1995 when ownership was transferred from DNRC
- Primary purpose: Irrigation
- Acres Irrigated: 6,085
- Number of users: 52
- Primary Diversion Point: Two diversions on the Musselshell River, with storage from Deadmans Basin Reservoir



Musselshell River flood event at aerial span (2011).  
Photo courtesy of DMWUA

a 30-inch diameter pipe. The pipe was supported by numerous support piers. Prior to the 2011 flooding event, the aerial span had significant damage on numerous occasions, including damage that resulted in a full rebuild.

The preferred replacement structure was identified as an inverted siphon, due to the historic issues with an aerial span at the project location. Some challenges were present at the project site, including shallow bedrock and proximity to a private irrigation dam. The new siphon utilized an HDPE pipe with new concrete transition structures.

### Work Breakdown

- Removal of existing aerial span
- New HDPE Siphon
- Associated concrete siphon transition structures

### Project History

In 2011, the Musselshell River experienced a significant flooding event, which damaged numerous ditches and irrigation structures operated by the DMWUA. Of these damaged structures, the largest and most technically challenging, the Delphia Canal Long Span Pipe over the Musselshell River, was put on hold for repairs until 2012, so funding and proper design could be established. The damage to the Long-Span Pipe included pier damage, pipe failure and outlet transition structure loss.

The Long-Span Pipe was originally constructed in the 1950's and consisted of a 150 foot aerial pipe span with



Aerial span damage during 2011 floods.  
Photo courtesy of DOWL

# DELPHIA CANAL INVERTED SIPHON (2012)

## DELPHIA-MELSTONE WATER USERS ASSOCIATION (DMWUA)

### Project Funding

The total cost of the project was **\$299,151**. To finance the project, the DMWUA used the following grant and loan programs:

- DNRC RRGL Grant - \$100,000
  - Redirected RRGL Grant that was utilized due to flooding damage and importance of critical irrigation infrastructure
- USDA Rural Development Loan - \$150,936
- USDA NRCS Cost Share - \$48,215
  - Cash contribution specifically dedicated to concrete and transition structures



Installation of fused HDPE Siphon under Musselshell River.  
Photo courtesy of DOWL

### Project Status & Results

- Project successfully completed in 2012
- Replacement of the aerial span with a siphon has ensured irrigation system functionality, even in high flow events
- Project was a team effort; landowner allowed access for borrow source and upstream dam owner cooperated during construction

### Project Partners

Owner: Delphia-Melstone Water Users Association

Engineer: DOWL

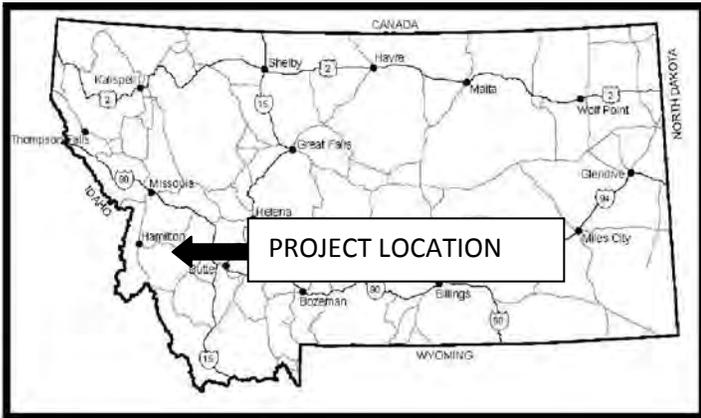
Contractor: Western Municipal Construction, Inc.

Construction Oversight: DOWL



Completed view of siphon location.  
Photo courtesy of DOWL

# EAST FORK ROCK CREEK DIVERSION & FISH SCREEN (2014) DNRC



## Flint Creek Water Project (FCWP) History

- Infrastructure completed in 1939, owned by DNRC
- Services Flint Creek Water Users, 44 ranches
- Project consists of 16,000 acre reservoir and five canals, at 46.6 miles in length
- Reservoir & portion of canal built on federal lands, operate by means of special use permit
- Primary purpose: Irrigation, recreation, fishing
- Primary Diversion Point: East Fork Rock Creek

## Project History

The construction of a fish screen at the canal intake on the East Fork of Rock Creek was a requirement of the US Forest Service as a condition of the original Special User Permit, which was issued in 1936. However, no fish screen was ever built at the site, and no documentation exists indicating why the structure was never built. Since then, the listing of Bull Trout as a threatened species has increased the urgency of the installation of a screen, as the USFS and USFWS have told the DNRC that they must comply with the special use permit. In 2003, the DNRC was again told of its obligation to provide a fish screen, which the DNRC agreed to. This siphon project was completed in 2009. Since completion, DNRC focused on taking action on the incorporation of the fish screen on the system, with preliminary engineering and alternatives analysis beginning in 2010.



Existing diversion prior to construction (2013).  
Photo courtesy of DNRC

The purposes of the project are as follows:

- Prevent fish entrainment in canals
- Increase flows to dewatered section of East Fork of Rock Creek by ensuring minimum of 5 cfs of flow
- Develop more angling opportunities (by keeping fish in the system)
- Fullfill the obligation to the USFS (and consequently, ensure the special use permit stays validated)

## Work Breakdown

- Construction of new concrete diversion
- New vertical panel fish screen
- Flow measuring device

# EAST FORK ROCK CREEK DIVERSION & FISH SCREEN (2014) DNRC

## Project Funding

The total cost of the project was **\$1,482,947**. To finance the project, the DNRC used the following sources:

- DNR RRGL Grant: \$100,000
- DNRC –CRDD Grant: \$15,000
- DNRC In-Kind: \$91,447
  - DNRC staff salaries & benefits
  - DNRC contracted professional Services
- FWP Future Fisheries: \$100,000
  - Provided funding assistance because project reduces fish entrainment, provides in-stream flow and better fishing opportunities
- MT DOJ NRDP Grants (1-2): \$587,500
  - NRDP funding is only available for projects in “injured areas” within the Upper Clark Fork River Basin. No grant program currently exists, though funding assistance is still available.
- USFWS Fisheries Restoration and Irrigation Mitigation Act (FRIMA) Grants (1-2): \$589,000
  - Provides funding for fish screen installation and diversion dam projects located in the Columbia Basin. Funding is no longer allocated through the grant program.



Installation of footing and wall for diversion (November 2013).  
Photo courtesy of DNRC



Diversion & fish screen (January 2014).  
Photo courtesy of DNRC

## Project Status & Results

- Project began in September of 2013 and was substantially complete in 2014

## Project Partners

Owner: DNRC

Engineer: GHD, Inc.

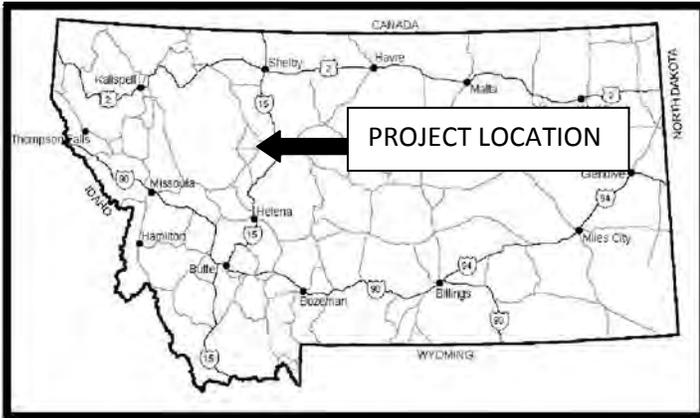
Contractor: Patterson Enterprises, Inc.



Operational vertical panel fish screen (2014).  
Photo courtesy of DNRC

# IMPROVING FORT SHAW IRRIGATION DISTRICT WATER EFFICIENCY (2014)

## FORT SHAW IRRIGATION DISTRICT (FSID)



### Fort Shaw Irrigation District History

- Infrastructure largely built in 1907-1908 as a component of the Fort Shaw Division of the Sun River Project, Bureau of Reclamation (USBR)
- Primary purpose: Irrigation
- Acres Irrigated: 10,000 (approx.)
- Number of users: 177 (approx.)
- Total Diversion: 225 cfs (approx.) from Fort Shaw Diversion Dam
- Primary Diversion Point: Sun River

### Project History

In 1982, the USBR reviewed the FSID's infrastructure status and determined many areas of repair that were necessary to increase efficiencies. In particular, the USBR report explained, seepage loss and project inefficiencies have rendered the canal in the district to have 46% efficiency. This loss was apparent in the boggy areas and high salinity areas. However, due to size of district, low net crop return and limited funding, improvements to efficiencies and infrastructure had been minimal since the 1982 review.

This project upgraded the most antiquated and inefficient delivery systems while improving in-stream flows in the Sun River. The water savings resulted in

an additional 12 cfs for summer Sun River flows. This project was accomplished by piping and canal lining.

### Work Breakdown

- Lining 2000 feet of canal
- Installing 2310 feet of PVC Pipe



Prepping canal for lining.  
Photo courtesy of FSID

# IMPROVING FORT SHAW IRRIGATION DISTRICT WATER EFFICIENCY (2014)

## FORT SHAW IRRIGATION DISTRICT (FSID)

### Project Funding

The total cost of the project was **\$781,000**. To finance the project, the FSID used the following grant and loan programs:

- USBR Watersmart Grant: \$300,000
  - Competitive grant program with grants up to \$300,000
- USBR In-Kind: \$9,000
- DNRC RRGL Grant: \$100,000
- Sun River Watershed Group In-Kind: \$20,000
  - Sun River Watershed Group provided assistance with grants and management
- Coco-Cola Foundation Grant: \$52,000
  - Grant due to water conservation from the project
- FSID In-kind and costs: \$300,000
  - Rates to users were raised, not because of the project, but because of general needs



Installation of new pipe & infrastructure.  
Photo courtesy of FSID

### Project Status & Results

- Project completed in April 2014. Some weather delays and construction material delays.
- Project reduced burden of O&M on FSID due to time and resources to maintain old system and FSID is better able to utilize limited water to meet user needs.
- Grants were the only feasible way the project could be accomplished by the District

### Project Partners

Owner: Fort Shaw Irrigation District

Engineer: TD&H Engineering

Contractor: Bolen Construction

Secondary: FSID Crews

Construction Oversight: TD&H Engineering, FSID



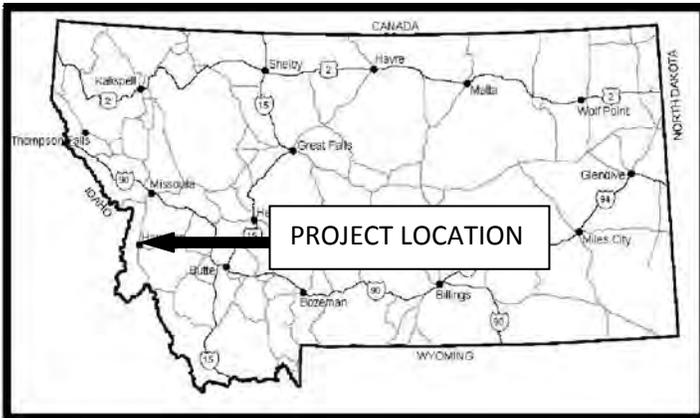
Installation of new pipe.  
Photo courtesy of FSID

# HEDGE CANAL DIVERSION DAM PROJECT, PHASE I & II (2011)

## DALY DITCHES IRRIGATION DISTRICT

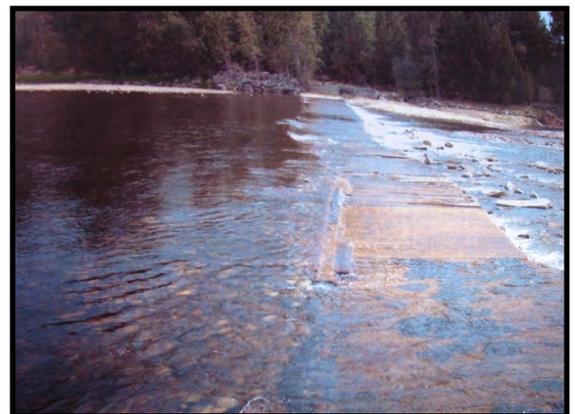
### Daly Ditches Irrigation District History

- Infrastructure built in late 1880's by private entity
- Daly Ditches Irrigation District (DDID) founded in 1982
- Primary purpose: Irrigation
- Acres Irrigated: 6,108
- Number of users: 778
- Total Diversion (cfs): 140 from Hedge Dam
- Primary Diversion Point: Bitterroot River



### Project History

The Hedge Canal Diversion Dam was originally constructed in 1908 and was a low head timber crib dam located on the Bitterroot River, 6 miles north of Darby. The structure was 320 feet long, 16 wide and has an estimated 3' drop. The structure had been exhibiting significant issues since the mid-1980's and had been shifting downstream significantly. Additional problems included weakening of the canal bank, river bank erosion and high turbidity. Replacement of the structure was identified as a priority project to secure water to users and mitigate fish entrainment. These issues resulted in constant maintenance by DDID crews over the past decade. This diversion dam provides water to 41% of district water users.



Pre-project photo of dam (2007).  
Photo courtesy of DDID

### Work Breakdown

#### *Phase I*

- Construction of a new low head dam (tightly grouted rock)
- Diversion apron
- Concrete abutment wall and grout cut-off wall
- Canal intake structure (with headgates and trash rack)

#### *Phase II*

- Boater notch
- Fish screen installation



Construction of grouted rock dam (2010).  
Photo property of H. Janssen

# HEDGE CANAL DIVERSION DAM PROJECT, PHASE I & II (2011)

## DALY DITCHES IRRIGATION DISTRICT

### Project Funding

The total cost of the project (both phases) was **\$1,275,670.31**. To finance the project, the DDID used the following grant and loan programs:

- US Army Corps of Engineers: \$431,500
  - Bi-annual appropriations from the Montana Legislature in the form of ACOE O&M Supplement
- American Reinvestment and Recovery Act (ARRA): \$290,000
  - DDID secured a one-time allocation through the ARRA funding.
- DNRC RRGL Grant: \$100,000
- Montana FWP Future Fisheries Program: \$98,000
  - Future Fisheries participated in this project due to the incorporation of a fish screen to prevent fish entrainment in the ditch.
- DNRC RRGL Loan: \$350,000
  - The remaining funding was secured through a loan from the DNRC. No DDID user rate increases were necessary to cover the cost of the loan repayment.
- DDID in-kind work: \$6,170.30



Post Phase I: Hedge Canal Dam (2010)  
Photo property of H. Janssen

### Project Status & Results

- Project (Phase I) completed in 2010.
- Phase II completed in 2011 and was the construction of a boater passage notch and vertical plate fish screen

### Project Partners

Owner: Daly Ditches Irrigation District

Engineer: Morrison-Maierle, Inc.

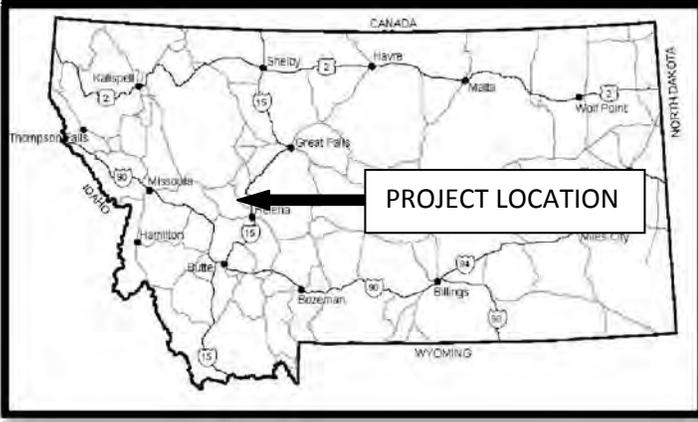
Contractor: Patterson Enterprises

Construction Oversight: DDID, Morrison-Maierle, USACE



Post Phase II: Hedge Canal Fish Screen.  
Photo courtesy of Morrison-Maierle, Inc.

# LITTLE PRICKLY PEAR CREEK IRRIGATION IMPROVEMENTS (2006) WIRTH RANCH



## Wirth Ranch History

- Five headgates located on property
- Acres Irrigated: 76 acres (hay)
- Current Diversion: 0.75 cfs from Little Prickly Pear Creek

## Project History

The Wirth Ranch had been using flood irrigation to service their hayfield for the last 50 years, with typical use of 3-6 cfs from a diversion located on Little Prickly Pear Creek. The landowner realized that the existing flood irrigation to their hayfield was better serviced with sprinkler irrigation, from a conservation and longevity standpoint. The Wirth Ranch decided to approach numerous funding agencies for assistance. The result was successful grant funding and the reduction of the diversion of Little Prickly Pear Creek to 0.75 cfs.

## Work Breakdown

- New pipe
- New reel sprinkler
- New pump, motor, fuel pump and fuel tank



View of installed sprinkler.  
Photo courtesy of Zach Wirth

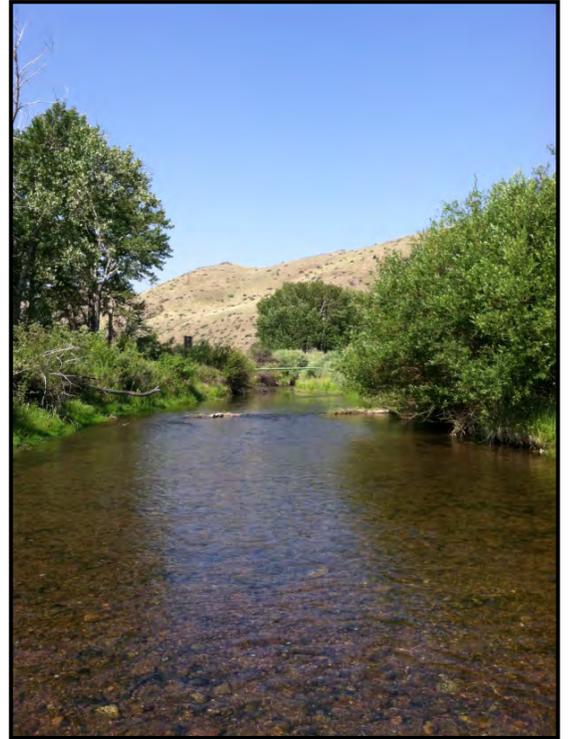
# LITTLE PRICKLY PEAR CREEK IRRIGATION IMPROVEMENTS (2006)

## WIRTH RANCH

### Project Funding

The total cost of the project was **\$119,040**. To finance the project, the Wirth Ranch used the following grant and loan programs:

- NRCS EQIP Grant: \$76,062
  - The EQIP Grant provides monies to agricultural producers in an effort to promote agricultural production and environmental quality.
- Montana FWP Future Fisheries Grant: \$15,000
  - Future fisheries participated in this project due to the reduction in irrigation water utilized and elimination of fish entrainment into the irrigation system.
- PPL Montana Community Fund: \$5,000
  - Provided due to the stewardship to the environment
- Wirth Ranch: \$15,250
  - In-kind work for excavation, backfill and pump house
- Other: \$7,728
  - Cash contribution from Wirth Ranch



Little Prickly Pear Creek in project vicinity.  
Photo courtesy of Zach Wirth

### Project Status & Results

- Project successfully completed in 2006.
- Project largely maintenance free and has been a success. Wirth Ranch has noticed an increase in stream water quality.
- Would have liked to use electric pump, but not feasible at the site. Started using diesel and switched to vegetable oil.

### Project Partners

Owner/Contractor: Wirth Ranch

Engineering Assistance: NRCS



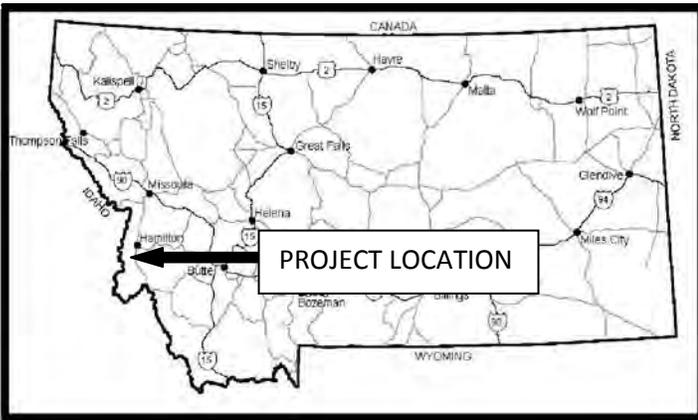
View of installed sprinkler.  
Photo courtesy of Zach Wirth.

# LOST HORSE CREEK SIPHON (2014)

## WARD IRRIGATION DISTRICT

### Ward Irrigation District History

- Construction began in 1903 with Ward Ditch
- Ward Irrigation District formed in 1938
- Primary purpose: Irrigation
- Acres Irrigated: 1000 (approx.)
- Number of users: 100 (approx.)
- Primary Diversion Points: Bitterroot River & Lost Horse Creek



### Project History

The Ward Canal crossing of Lost Horse Creek has been a significant issue for decades. Every year, a gravel push up dam was installed by the District to allow Ward Ditch to cross Lost Horse Creek. This creates a significant disconnect from Lost Horse Creek to the Bitterroot River. Additionally, water between the canal and the creek would mix, creating issues with fish entrainment into the ditch, of which, one study reported approximately 7000 fish per year from Lost Horse Creek were entrained into Ward Canal. Other considerable issues related to the crossing included sedimentation and fish passage. After numerous preliminary alternatives were explored, it was determined that the most effective solution for the site was the installation of a siphon creating a low impact and effective crossing of Lost Horse Creek. This project improved irrigation efficiency, separated canal water from Lost Horse Creek, enhanced upstream fish passage and reduced fish entrainment into the ditch system.

### Work Breakdown

- Construction of a new HDPE siphon
- New railway undercrossing
- Concrete inlet and outlet siphon structures
- Canal improvements
- Monitoring wells



View of site demolition (October 2014).  
Photo courtesy of Clark Fork Coalition



View of siphon installation (October 2014).  
Photo courtesy of Clark Fork Coalition

# LOST HORSE CREEK SIPHON (2014)

## WARD IRRIGATION DISTRICT

### Project Funding

The total cost of the project was **\$313,500**. To finance the project, the WID used numerous funding agencies. The WID and the engineering consultant secured the RRGL Grant. The other funding mechanisms were largely secured with assistance from the Clark Fork Coalition.

- MT DEQ 319 Contract: \$106,000
  - Provides funding assistance for projects who are impacted by non-point source pollution, which in this project, was from the high turbidity from the push up dam.
- MT DNRC RRGL Grant: \$100,000
- Montana FWP Future Fisheries: \$93,500
  - Future Fisheries participated in the project because it would eliminate the presence of a seasonal migration barrier, reduce fish entrainment and increase return flows to the Bitterroot River
- Western Native Trout Initiative Grant: \$10,000
  - Provided funding because the project assisted Westslope Cutthroat and Bull Trout by increasing connectivity of the watershed, restoring habitat and removing the existing barrier and providing upstream passage
- Clark Fork Coalition (CFC) In-Kind: \$4,000
  - Included writing grants, construction oversight.



View of canal bank improvements (March 2015).  
Photo courtesy of Clark Fork Coalition

### Project Status & Results

- Project successfully completed in 2014
- Low project bid was higher than available funding. CFC secured additional funding.

### Project Partners

Owner: Ward Irrigation District

Engineer: Morrison-Maierle

Contractor: Specialty Excavating

Construction Oversight: Morrison-Maierle, CFC



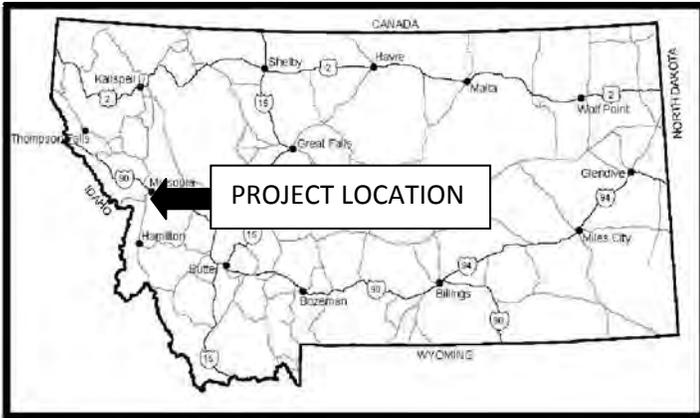
View of siphon post-installation (April 2015).  
Photo courtesy of Clark Fork Coalition

# ORCHARD HOMES DITCH INTAKE IMPROVEMENTS (2012)

## ORCHARD HOMES DITCH COMPANY (OHDC)

### Orchard Homes Ditch Company History

- Infrastructure largely completed in early 1900's
- Primary purpose: Irrigation
- Acres Irrigated: 200
- Total Diversion: 7 cfs
- Primary Diversion Point: Clark Fork River



### Project History

Since its initial construction almost a century ago, the Orchard Home Ditch Company infrastructure has serviced several hundred users within the Missoula Valley, primarily urban irrigators growing produce. The OHDC also provides water to the Missoula Parks and Recreation Department for use in City Parks and Silvers Lagoon.

The existing intake structure located on the Clark Fork River was over 60 years old and in dire need of numerous improvements, to ensure adequate water delivery to its users. The intake structure exhibited poor slide gate functionality and sealing, debris and sediment issues (requiring constant maintenance), poor concrete quality and return channel weir initial design problems.

After looking at project alternatives, it was decided that numerous improvements were necessary to the intake. These improvements will ensure water delivery to users and will increase the quality management of the infrastructure.

### Work Breakdown

- Headgate replacement (slide gates)
- Flow gage
- Intake diversion
- Log grate



View of completed slide gates (2014).  
Photo courtesy of Morrison-Maierle

# ORCHARD HOMES DITCH INTAKE IMPROVEMENTS (2012)

## ORCHARD HOMES DITCH COMPANY (OHDC)

### Project Funding

The total cost of the project was **\$119,000**. To finance the project, Orchard Homes Ditch Company used the following funding sources:

- DNRC RRGL Grant: \$100,000
  - Missoula Conservation District applied on behalf of the Company for the RRG grant, due to their status as a company.
- DNRC IDG Grant: \$12,000
  - Grant available to private infrastructure work
- Private Irrigation Grant: \$5,000
- Orchard Homes Ditch Company:
  - \$2,000 cash
  - Project management (not quantified)

### Project Status & Results

- Project successfully completed in 2014
- The diversion is adjustable and requires maintenance to account for flow variation and log placement
- Project ensures water delivery and subsequent benefits including access to local produce, urban agricultural and natural resource benefits from recreation in city parks and lagoons.

### Project Partners

Owner: Orchard Homes Ditch Company

Engineer: Morrison-Maierle, Inc.

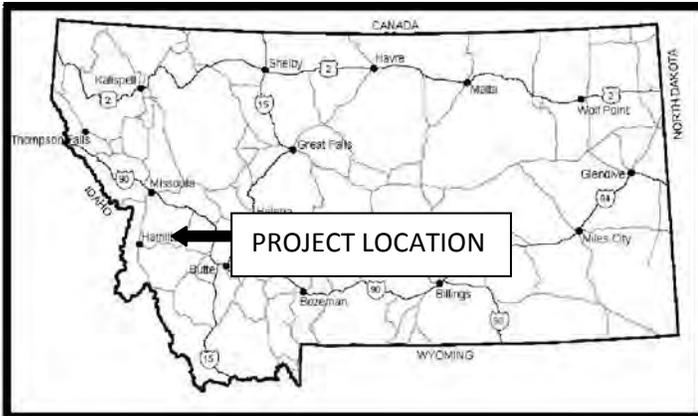
Contractor: Patterson Enterprises, Inc.



View of completed intake project (2014).  
Photo courtesy of Morrison-Maierle

# STONY CREEK DIVERSION & FISH SCREEN (2014)

## TROUT UNLIMITED (ON BEHALF OF TONY MARLETTO)



### Project History

The Marletto Ranch had been using flood irrigation to service their hayfields adjacent to Rock Creek, with maximum use of 6 cfs from a diversion located on Stony Creek servicing their canal. The landowner had been having to perform yearly in-stream maintenance with the concrete eco-block diversion to ensure water deliverability to the canal and was also concerned with fish getting stranded in his canal system. A study in 2009 found significant numbers

of cutthroat trout and brown trout entrained in the ditch downstream of the headgate. Trout Unlimited became involved in the project and spearheaded coordination efforts between participating agencies and facilitated grant administration. As the actual diversion point is located on Forest Service lands, significant coordination occurred with the Forest Service. After soliciting an engineer and going through the conceptual design process, the recommended alternative was the incorporation of a new fish-friendly rock diversion, new fish screen and outlet return and headgate improvements.

### Work Breakdown

- New rock irrigation diversion
- Remove and reset culvert & headgate
- New timber headwall
- New fish screen, approach flume and return flume installation
- New fish return pipe



Diversion/headgate prior to replacement (May 2014).  
Photo courtesy of Great West Engineering, Inc.



New rock diversion construction (Fall 2014).  
Photo courtesy of Farmers Conservation Alliance

# STONY CREEK DIVERSION & FISH SCREEN (2014)

## TROUT UNLIMITED (ON BEHALF OF TONY MARLETTO)

### Project Funding

The total cost of the project was **\$48,813**. To finance the project, the landowner and Trout Unlimited used the following grants and funding sources:

- Montana FWP Future Fisheries: \$23,774
  - Future fisheries participated in this project due to the elimination of fish entrainment into the irrigation system and to promote upstream fish passage
- Trout Unlimited In-kind & cash: \$5,039
  - Facilitated grant coordination, permitting, engineer coordination, bidding and construction CM
- USFWS FRIMA Grant: \$10,000
  - FRIMA provided funding due to the location (west of the Continental Divide), the reduction in native fish entrainment, because the project demonstrates at least 35% of total cost is from funding sources other than FRIMA and that the Stony Creek watershed is part of a basin recovery plan. FRIMA Grant funding no longer available to new grant applications.
- Private Landowner: \$10,000
  - Cash contribution from Tony Marletto



Fish screen and return installation (Fall 2014).  
Photo courtesy of Farmers Conservation Alliance

### Project Status & Results

- Project successfully completed in November of 2014.
- Project has been low maintenance and provided landowner with dependable means of water conveyance.

### Project Partners

Owner: Tony Marletto

Engineering: Great West Engineering, Inc.

Contractor: Groomes Excavating, Inc.

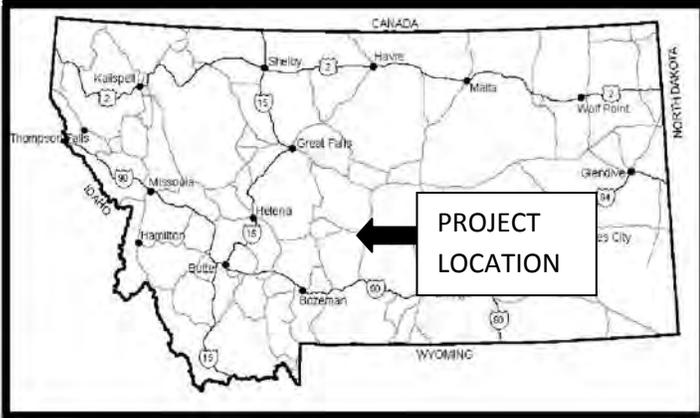


Operational fish screen (Fall 2014).  
Photo courtesy of Farmers Conservation Alliance

# TWO DOT CANAL REHABILITATION PROJECT (2010)

## DNRC

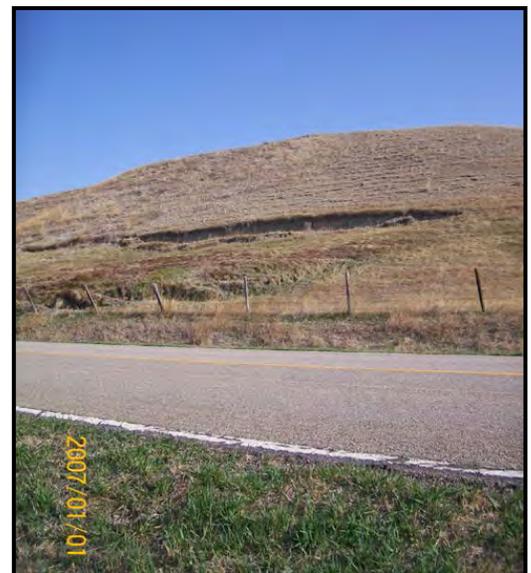
### Upper Musselshell Water Project (UMWP) History



- Infrastructure completed in 1939 by federal WPA And State of Montana Water Conservation Board
- Currently owned by DNRC and operated by Upper Musselshell Water Users Association (UMWUA)
- Project consists of three dams, two reservoirs with total of 30,134 acre-feet of storage and five canals at 52 miles in total length
- Primary purpose: Irrigation
- Number of users: 22 ranches
- Acres Irrigated: 30,658
- Primary Diversion Point: Musselshell River

### Project History

The 32-mile long Two Dot Canal located west of Two Dot has had significant deterioration issues related to original design and substandard repairs and has required significant rehabilitation. The UMWU have also noted that considerable amounts of seepage loss existed through many sections of the canal and water shortages were problematic. In 2007, a highway patrolman observed sloughing on a hillside below the canal, in the vicinity of Highway 12 near Two Dot. This sloughing was likely propagated by the excessive canal seepage. Failure of this canal section could cause damage to US Highway 12, private property and created a significant risk to the traveling public. The DNRC and the UMWUA understood that this unstable section of canal and associated seepage areas create a significant hazard and should be remedied. The DNRC investigated numerous alternatives for liners and concluded that an EPDM liner was the most effective solution.



Sloughing near Highway 12 (2007).  
Photo courtesy of DNRC

### Work Breakdown

- Approximately 1800 linear feet of EPDM canal liner was installed in the Two Dot canal prism above US Highway 12

# TWO DOT CANAL REHABILITATION PROJECT (2010)

## DNRC

### Project Funding

The total cost of the project was **\$118,511**. To finance the project, the DNRC used the following sources:

- DNR RRGL Grant: \$100,000
  - Grant secured through the RRGL program.
- DNRC In-Kind: \$18,511
  - DNRC staff salaries & benefits

### Project Status & Results

- Project was completed in 2010

### Project Partners

Owner: DNRC

Engineer: DNRC staff

Contractor: Glacier Excavating, Inc.



View of regrading work (April 2010).  
Photo courtesy of DNRC

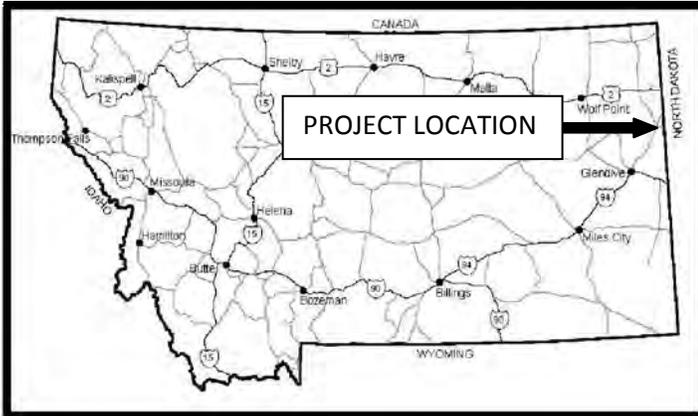


View of liner installation (April 2010).  
Photo courtesy of DNRC

# INCREASING IRRIGATION EFFICIENCY (2013)

## SIDNEY WATER USERS IRRIGATION DISTRICT (SWUID)

### Sidney Water Users Irrigation District History



- Infrastructure completed in 1938 as the Sidney Water Users Association Irrigation Project by the Montana Water Resources Board
- Sidney Water Users Irrigation District formed in 1995 after DNRC transferred ownership
- Primary purpose: Irrigation
- Acres Irrigated: 4,753
- Total Diversion (cfs): 133 (approx.)
- Primary Diversion Point: Yellowstone River

### Project History

Since inception, repairs and replacements have been conducted within the system. In 1969, with assistance from the USDA Soil Conservation Service, improvements to intakes, expansion of canal systems and floodwater structures were completed over a five year period. Minimal large scale improvements were completed again until 2002, when the SWUID received a DNRC RRGL Grant, for Phase 1, which improved water delivery for Districts 1 and 2. The NRCS also assisted in development of alternatives and design. From 2006 to 2009 improvements were conducted, primarily with SWUID equipment. A second RRGL Grant was obtained to assist with Phase 2 improvements. In 2009, the SWUID determined to continue improvements to the system and Phase 3 was implemented, which largely had to do with inefficient earth lined canals and seepage issues.

This project upgraded many antiquated and inefficient delivery systems while improving in-stream flows in the Yellowstone River.

### Work Breakdown

- Construction of two sections of PVC pipeline totaling 3.1 miles and the removal of inefficient earth lined canals.



Canal section prone to seepage prior to construction.  
Photo courtesy of SWUID

# INCREASING IRRIGATION EFFICIENCY (2013)

## SIDNEY WATER USERS IRRIGATION DISTRICT (SWUID)

### Project Funding

The total cost of the project was **\$594,585**. To finance the project, the SWUID used the following grant and loan programs:

- USBR Watersmart & Energy Efficiency Grant: \$297,292
  - Typically provides funding assistance up to \$300,000
- DNRC RRGL: \$200,000
  - Two grants at \$100,000 secured for the project due to difference phases and components of projects
- SWUID Cash Match: \$97,293
- NRCS: Technical Assistance
  - Engineering, drafting, and construction compliance
  - Not included in total project cost



Installation of PVC pipeline.  
Photo courtesy of SWUID

### Project Status & Results

- Project began in 2011 with final completion in spring of 2013
- Addressed significant canal leakage and water conservation issues

### Project Partners

Owner: Sidney Water Users Irrigation District

Engineer: NRCS

Contractor: SWUID equipment and labor



View of completed pipeline location.  
Photo courtesy of SWUID

## **FUNDING SOURCES**

A wide variety of funding sources are utilized for major dam and canal improvements throughout the state including grants, loans and contracts. Other sources of funding for large projects often include in-kind work by the applicant and standard loans through banks. There are also a few funding opportunities that are restricted to DNRC owned dams, which include: Montana Water Storage Special Revenue Account and Hydropower Account funds. The following list, while comprehensive, is not all-inclusive, as new or lightly publicized funding entities appear frequently.

### **MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

#### **Renewable Resource Grant and Loans Program (RRGL)**

##### **History**

This grant and loan program was established by the Montana Legislature to enhance renewable resources in the State. The program is primarily funded by natural resource based taxes.

##### **Purpose & Applicant Type**

The intent of the program is to provide funding assistance to enhance the well being of Montanans through the conservation, management or preservation of a targeted renewable resource. Typical projects include water conservation, water for public, domestic, stock or other beneficial uses, water quality, forestry, air quality, resource education and waste management.

The funding is available for governmental entities. These entities include cities, towns, counties, county conservation districts, water and sewer districts, irrigation districts, joint boards of control and state agencies.

##### **Funding Usage & Match Requirements**

Funds may be used, according to the Montana Code Annotated, for:

- feasibility, design, research, and resource assessment studies
- preparation of construction, rehabilitation, or production plans
- construction, rehabilitation, production, education or other implementation efforts

No funding match is required for governmental entities. However, if the applicant is applying on behalf of a private entity, a 25% match of the grant will be required.

##### **Project Eligibility**

Projects must meet the following requirements:

- Result in resource and citizen benefits
- Be financially and technically feasible
- Have no significant environmental impacts
- Have an adequate project management plan

### **Applications & Ranking Procedure**

There is one yearly application period, with applications typically being due in mid-May. The total yearly allocation of funding to the program is variable and subject to Montana legislature allocations. For grant requests, no more than \$125,000 is available for any project. For loan request, no specific limits exists, but are limited by applicants debt capacity. The loan is essentially a bond, comprised of a revenue bond or tax-backed bonds.

This is a competitive program with grants and loans competing against each other on a yearly basis, throughout the entire State. The DNRC provides final rankings and recommendations to the governor. Typically in January, recommendations are finalized and submitted to the Montana Legislature. Legislative authorization is typically complete by the end of April and contracts with DNRC typically occur in early July.

### **Grant & Loan Administration**

Upon award, the applicant is required to enter into a grant agreement with DRNC which stipulates funding requirements. No funding will be approved for costs incurred prior to agreement.

#### **Contact Information:**

Pam Smith – DNRC Program Officer

1625 Eleventh Avenue

Helena, MT 59620

Telephone: (406) 444-6839

Email: pamsmith@mt.gov

Website: <http://dnrc.mt.gov/divisions/cardd/resource-development/renewable-resource-grant-program>

**MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

**Renewable Resource Private Loan Program (WDL)**

**History**

This loan program was established by the Montana Legislature in 1981 to promote beneficial use of water.

**Purpose & Applicant Type**

The intent of the program is to provide funding assistance to enhance the well being of Montanans through the conservation, management and preservation of a targeted renewable resource. Typical projects include conversion from flood to sprinkler irrigation, irrigation dams, lining ditches, automation of irrigation systems and developing rural water supplies.

Loans are available to individuals, partnerships, associations and corporations.

**Funding Usage & Match Requirements**

Funds may be used for costs of design engineering, construction and project management.

No funding match is required.

**Project Eligibility**

Preliminary planning must be complete before construction funds are requested by the applicant.

Loan funds may be used for water related projects, which must conserve, distribute, develop, store and use water for beneficial uses and promote the efficient use, management and protection of water.

**Applications & Ranking Procedure**

Applications may be submitted at any time. The DNRC reviews applications for completeness and will be evaluated to determine if they are technically and financially feasible. Recommendations are submitted to the director of DNRC for final funding decision. Loans may not exceed \$400,000 and are funded from general obligation bonds. Repayment periods may not exceed 30 years and loan rates are same rates as state bond. Loans are secured by a lien on the Applicant's real estate.

**Loan Administration**

Expenses incurred prior to the loan approval are not reimbursable. Standard reporting requirements are required. All contracting for professional services procedures must be approved by DNRC.

**Contact Information:**

Bill Herbolich – DNRC

1625 Eleventh Avenue

Helena, MT 59620

Telephone: (406) 444-6668

Email: [wherbolich@mt.gov](mailto:wherbolich@mt.gov)

Website: <http://dnrc.mt.gov/divisions/cardd/resource-development/renewable-resource-grant-program/renewable-resource-loans-to-private-entities>

**MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

**Renewable Resource Private Water Grant (PVG) Program**

**History**

This grant program was established by the Montana Legislature to support water projects by non-government entities.

**Purpose & Applicant Type**

The intent of the program is to provide funding assistance to projects that benefit or develop a water resource.

Grants are available to non-governmental entities including individuals, associations, partnerships and corporations (profit and non-profit).

**Funding Usage & Match Requirements**

Funds may be used for costs of construction and project management. Funds may not be used for feasibility studies, research and/or public information.

No funding match is required.

**Project Eligibility**

Grant funds may be used for projects that benefit or develop a water resource.

**Applications & Ranking Procedure**

Applications may be submitted at any time. Grants are available up to \$5,000 or 25% of the project cost, whichever is least. The DNRC reviews applications for completeness and will be evaluated to determine if they are technically and financially feasible.

**Grant Administration**

Reimbursement is based on actual provided receipts and will be done on a one-time only basis. Project costs can only be incurred after grant agreement is signed. A project report must also be completed to accompany the payment request.

**Contact Information:**

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Helena, MT 59620

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Email: [wherbolich@mt.gov](mailto:wherbolich@mt.gov)

Website: <http://dnrc.mt.gov/divisions/cardd/resource-development/renewable-resource-grant-program/renewable-resource-loans-to-private-entities>

**MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

**Renewable Resource Emergency Grant and Loan Program**

**History**

This grant and loan program was established by the Montana Legislature to support only serious emergencies that meet program requirements.

**Purpose & Applicant Type**

The intent of the program is to provide funding assistance to emergencies that pose an immediate threat to the beneficial management of a renewable resource. Past projects have included dike failures, emergency dam repairs, and emergency repairs to municipal drinking water systems.

Grants and loans are available to both governmental and non-governmental entities.

**Funding Usage & Match Requirements**

Funds may be used for costs associated with emergency repairs.

No funding match is required.

**Project Eligibility**

Projects eligible include those that if delayed until legislative approval, will cause substantial damages or legal liability to the applicant.

**Applications**

Applications may be submitted at any time and DNRC Emergency Grant Program staff should be contacted immediately. A detailed problem description, proposed solution, financials and funding sources will be required. Following initial notification, DNRC engineer will arrange site investigation and determination will be made quickly. Typically grants can be executed within a matter of days, however loans may take up to 45 to 60 days.

Grants are limited to \$30,000 per project. Loans may be up to \$10 million dollars, however, loans are limited by the applicants bonded debt capacity. The term of the loan is variable, but generally limited to 20 years.

**Grant and Loan Administration**

Standard DNRC RRGL reporting methods are required.

**Contact Information:**

Bob Fischer – DNRC  
1625 Eleventh Avenue  
Helena, MT 59620  
Telephone: (406) 444-6688  
Email: rfischer@mt.gov  
Website: <http://dnrc.mt.gov/divisions/cardd/resource-development/renewable-resource-grant-program/renewable-resource-emergency-grants-and-loans>

## **MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

### **Irrigation Development Grants (IDG)**

#### **History**

This grant program was established by the Montana Legislature to increase the value of irrigation crops while preserving natural resources.

#### **Purpose & Applicant Type**

The intent of the program is to provide funding assistance to assist in the development of new irrigation and to sustain and increase the value of existing irrigation.

Grants are available to private for profit, private non-profit, governmental and Tribal entities, individuals and other groups within the State.

#### **Funding Usage & Match Requirements**

Funds from the grant must be used for:

- Preliminary engineering reports for new irrigation systems or repairs if new irrigation acres would result
- Complete environmental assessments, marketing studies, project coordination
- Hire professional consultants to address issues such as creation of a new irrigation district or water users association
- Projects involving Farm to School/Lunch Table Programs
- Other projects that increase the value of irrigation agriculture (on a case by case basis)

No funding match is required for governmental entities. However, if the applicant is applying on behalf of a private entity, a 25% match of the grant will be required.

#### **Project Eligibility**

Projects must meet the required funding usage delineated above.

#### **Applications & Ranking Procedure**

Applications may be submitted at any time. Grant allocations are variable, depending on type. Irrigation projects (lining, headgates, and infrastructure) grant limit is \$20,000. Preliminary engineering reports, studies and surveys grant limit is \$5,000. Administrative grants for contracted administrative costs associated with irrigation development limit is \$5,000. The total yearly allocation of funding to the program is variable and subject to legislature allocations, but typical amounts are around \$100,000 per year. The DNRC reviews applications for completeness and will be evaluated to determine if they are technically and financially feasible.

#### **Grant Administration**

Upon award, the applicant is required to enter into a grant agreement with DNRC which stipulates funding requirements. Grant funds are dispensed on a reimbursement basis. No funding will be approved for costs incurred prior to agreement.

**Contact Information:**

Ann Kulczyk – DNRC

PO Box 231

228 6<sup>th</sup> Street South

Glasgow, MT 59230

Telephone: (406) 228-59230

Email: [akulczyk@mt.gov](mailto:akulczyk@mt.gov)

Website: <http://dnrc.mt.gov/divisions/cadd/resource-development/loan-and-grant-programs-for-irrigation-development>

## **DEPARTMENT OF NATURAL RESOURCES (DNRC)**

### **Conservation Districts Grants Program – HB223 Grant**

#### **History**

This grant program was established by the Montana Legislature in 1981 and is funded on coal severance tax monies.

#### **Purpose & Applicant Type**

The intent of the program is to provide funding assistance to conservation districts for standard conservation practices.

Grants are only available to conservation districts.

#### **Funding Usage & Match Requirements**

Funds from the grant may not be used to purchase food, common items that can be easily borrowed, equipment for contractors, or items not considered essential.

See match requirements below.

#### **Project Eligibility**

Funds may be used for any project that a conservation district is authorized to carry out and must demonstrate a public and conservation benefit.

#### **Applications & Ranking Procedure**

Applications may be submitted at any time, with application review by the Resource Conservation Advisory Council (RCAC) typically occurring four times per year. Grant allocations are variable, depending on type. On the ground conservation projects grant limit is \$20,000 with no match required. More than \$20,000 may be requested, however, a 50:50 cash match is required. Education grant limits are \$10,000 with no match required. The total yearly allocation of funding to the program is variable and subject to legislature allocations.

The RCAC reviews applications and makes recommendations to the DNRC. Projects are evaluated on the following criteria: conservation, public benefit, cost effectiveness, fills immediate need, its district's program, produces matching funds and/or in-kind services, project impact, long-term benefits and funding length.

#### **Grant Administration**

Upon award, the applicant is required to enter into a grant agreement with DNRC which stipulates funding requirements. No funding will be approved for costs incurred prior to agreement.

#### **Contact Information:**

Laurie Zeller, DNRC

Telephone: (406) 444-6669

Email: lzeller@mt.gov

Website: <http://dnrc.mt.gov/grants-and-loans/grants/cardd/223guidelines.pdf>

## **MONTANA FISH, WILDLIFE & PARKS (FWP)**

### **Future Fisheries Improvement Program (FFIP) Grants**

#### **History**

This grant program, which is funded by the MFWP and began in 1995, is largely sourced from the sale of statewide fishing licenses.

#### **Purpose & Applicant Type**

The intent of the program is to provide assistance for the growth and propagation of wild and native fish species throughout lakes, rivers and streams in the state.

The funding is available for any applicant type; private company, non-profit, individual, governmental agencies, angling groups, etc.

#### **Funding Usage & Match Requirements**

Funds must be used for costs of design/build, construction and maintenance. Funding cannot be used for overhead, monitoring, watershed assessments, contingency or design fees alone.

No funding match is required, though projects with matches are strongly encouraged. Applicants may submit multiple grant requests during funding period (for separate projects).

#### **Project Eligibility**

Projects must have public benefits and accomplish one or more of the following items:

- Improve or maintain fish passage
- Restore or protect naturally functioning stream channels or riparian areas
- Prevent loss of fish into diversions (entrainment)
- Restore or protect spawning habit
- Enhance stream flow
- Restore or protect native fish populations
- Improve fishing in a lake or reservoir

#### **Applications & Ranking Procedure**

There are two application periods, with applications typically being due December 1<sup>st</sup> and June 1<sup>st</sup> of each year. The total allocation of funding to the program is between \$350,000 and \$650,000 per year. There is no monetary limit for individual grants; however, grants are strongly encouraged to provide cost-sharing. This is a competitive program with grants of all types competing against each other on a semi-yearly basis. Grants will be reviewed and evaluated by the FFIP Review Panel and will be evaluated on the following criteria: public benefit to wild fisheries, long term success, native fish benefits, in-kind services and cost-sharing, importance of lake or stream, local support and participation, addressing cause of primary problems, and sensitivity to other wildlife species.

**Grant Administration**

The applicant must enter written agreement with FWP. FFIP functions as a reimbursement program, where project sponsors submit invoices to FWP for payment. Itemized invoices of expenses and receipts approved by the sponsor are required.

**Contact Information:**

Michelle McGree – Montana FWP

1420 E. Sixth Avenue

Helena, MT 59620-0701

Telephone: (406) 444-2432

Email: mmcgree@mt.gov

Website: <http://fwp.mt.gov/fishAndWildlife/habitat/fish/futureFisheries/>

## **U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION (USBR)**

### **WaterSMART Water and Energy Efficiency Grant**

#### **History**

This grant program, which is funded by the USBR, was created to provide Federal leadership and assistance on sustainable water management strategies.

#### **Purpose & Applicant Type**

The intent of the grant program, as it pertains to dam and irrigation projects, is largely water conservation, energy efficiency, and facilitation of water markets for the western United States.

The funding is available for many applicant types: states, Indian tribes, irrigation districts, water districts, and other organizations with water or power delivery. Applicants do not have to be on a USBR system.

#### **Funding Usage & Cost Sharing**

Funds can be used for costs associated with design, construction and construction management.

Applications must provide at least 50% match of total project costs from non-federal sources, either in cash or in-kind work. Multiple applications (for the same project) may be submitted utilizing separate funding groups (see funding group information below).

#### **Project Eligibility**

Projects should accomplish one or more of the following items:

- Conserve and use water more efficiently; increase the use of renewable energy and improve energy efficiency; protect endangered and threatened species; facilitate water markets; carry out other activities to address climate related impacts on water

#### **Applications & Ranking Procedure**

There is one yearly application period, with applications typically being due in mid-January. The total yearly allocation of funding to the program is variable and subject to Congress allocations, but typical amounts are between \$10 million and \$15 million. No more than \$1,000,000 may be awarded to a single applicant. However, there are varying funding groups available which change on a yearly basis. Typically, most grant funding allocated is limited to \$300,000 per applicant. This is a competitive program with grants competing against each other on a yearly basis, throughout the western United States.

#### **Grant Administration**

Generally, project completion should be within 2 to 3 years of project award. Standard grant practicing reporting is required.

#### **Contact Information:**

Shaun M. Wilken - BoR  
P.O. Box 25007, Mail Code: 84-27852  
Denver, CO 80225  
Telephone: (303) 445-3697  
Email: [swilken@usbr.gov](mailto:swilken@usbr.gov)  
Website: <http://www.usbr.gov/WaterSMART/weeg/index.html>

## **USDA - NATURAL RESOURCES CONSERVATIONS SERVICE (NRCS)**

### **Environmental Quality Incentives Program (EQIP) Grant**

#### **History**

This grant program, which is funded by the USDA, and allocated through local NRCS offices, was created to provide financial and technical assistance to agricultural producers and is a component of the Farm Bill.

#### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide grants to promote agricultural production and environmental quality as compatible goals.

The funding is available for agricultural producers and owners of non-industrial private forestland and Tribes. Eligible lands include cropland, rangeland, pastureland, forestland and other farm or ranch lands. This funding is typically not utilized on dam projects.

#### **Funding Usage & Cost Sharing**

Funds can be used for costs associated with design, construction and construction management. Occasionally, the NRCS outsources engineering to registered technical service providers.

Cost sharing requirements are variable depending on the project type. Generally, grants funds will equate to about 50-75% of total project cost, while the required match is 25-50% of the project cost.

#### **Project Eligibility**

The primary focus of the general EQIP funding pool is to address soil erosion and water quality resource concerns on croplands and adjacent areas. Though numerous, more specific funding pools are available and should be investigated during the application process.

#### **Applications & Ranking Procedure**

Applications are accepted on a continual basis; however the NRCS does have application cut-off dates for submission deadlines and are typically in early June. Project applicants are competing against each other on a regional basis, depending on the project's location within the state. The total allocation of funding to the program is variable and subject to Farm Bill legislation. Grant funding allocated is up to \$450,000 per applicant, though allocations are considerably less.

#### **Grant Administration**

Signature of contract and agreement of implementation of planned conservation practices to NRCS standards is required.

#### **Contact Information:**

Local NRCS offices – Variable contacts

Primary EQIP Grant Information: Jeanne LaSorte

Telephone: (406) 587-6849

Email: Jeann.LaSorte@mt.usda.gov

Website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/programs/financial/eqip/>

## **US FISH & WILDLIFE SERVICE**

### **North Americans Wetlands Conservation Act Grants**

#### **History**

This grant program was enacted by the North Americans Wetlands Conservation Acts (NAWCA) in 1989 and provides matching grants to carry out wetlands conservation projects for the benefits of wetlands associated migratory birds and other wildlife. Funding for the program comes from fines and penalties from the Migratory Bird Treaty act, federal fuel taxes on small gasoline engines, and interest accrued on the fund.

#### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance for projects that involve long term protection, restoration, and/or enhancement to wetlands and associated uplands habitat. This funding is typically not utilized on irrigation projects.

The funding is available for any applicant type: non-profit, company, individual, governmental agencies, tribes, watershed groups, birding groups, etc.

#### **Funding Usage & Match Requirements**

Eligible funding usage includes; land acquisition, wetland restoration, wetland enhancement, wetland establishment, other direct long-term wetland conservation, indirect costs, and salary costs. Notable ineligible funding usage includes: mitigation activity required by Federal, state or local regulations, stewardship, monitoring, proposal planning and loan interests.

Applications must provide at least 50% of total project costs from non-federal sources, either in cash, in-kind or other grants.

#### **Project Eligibility**

Projects must involve long-term protection, restoration, and/or enhancements of wetlands and associated uplands habitats for all wetlands associated migratory birds.

#### **Applications & Ranking Procedure**

There are two application periods per year, with variable application due dates, typically in late February and early July. The application process for this grant is fairly lengthy and rigorous. The total allocation of funding to the program is variable, but generally around 50 million dollars for Standard Grants and 5 million dollars for Small Grants. If the grant request is \$75,000 or less, it is considered an NAWCA Small Grant and between \$75,000 and \$1,000,000 is a NAWCA Standard Grant. Grant requests may exceed \$1,000,000 but must be accompanied by justification of need. This is a competitive program with grants of all types across the United States competing against each other on a bi-yearly basis. The Council provides final rankings and recommendations. The most competitive applications: show clear connection between money spent and wetland benefits, are cost effective, are complementary among match and grant funded actions, can be completed in 2 years from funding award, and include minimal administrative costs.

## **Grant Administration**

Standard grant practicing reporting is required with administrative guidelines available from NAWCA.

### **Contact Information:**

David Buie – Standard Grants Proposal Coordinator

5275 Leesburg Pike, MS-MB

Falls Church, VA 22041

Telephone: (301) 497-5870

Email: david\_buie@fws.gov

Rodecia McKnight – Small Grants Proposal Coordinator

5275 Leesburg Pike, MS-MB

Falls Church, VA 22041

Telephone: (703) 358-2266

Email: rodecia\_mcknight@fws.gov

Website: <http://www.fws.gov/birdhabitat/Grants/NAWCA/Standard/index.shtm>

<http://www.fws.gov/birdhabitat/Grants/NAWCA/Small/2014.shtm>

## **WESTERN NATIVE TROUT INITIATIVE (WNTI)**

### **Small Grants Funding Program**

#### **History**

This grant program is funded by the WNTI (with contributions from numerous sources) beginning in 2006, and was developed to restore and recover western native trout and char species across their historic range.

#### **Purpose & Applicant Type**

The intent of the program is to provide a source of funding for projects involved in the conservation of western native trout and char species. The funding is available for any applicant type; private company, non-profit, individual, governmental agencies, angling groups, etc.

#### **Funding Usage & Match Requirements**

Funds can be used for costs associated with design and construction. Funding cannot be used for projects already completed, refunding items purchased prior to grant award, monies towards purchase of private land, and staff salaries/benefits. No funding match is required, though projects that have secured matching funds or in-kind support are highly valued.

#### **Project Eligibility**

Projects considered for funding include: riparian or in-stream restoration, barrier removal or construction, population or watershed assessments and water leases or acquisitions to improve in-stream flows.

#### **Applications & Ranking Procedure**

There is one yearly application period, with applications typically due in mid-June of each year. Grants are limited to a maximum of \$3,000. This is a competitive program with grants competing against each other on a yearly basis throughout the western United States. Grants will be reviewed and awarded by the WNTI steering committee. The most competitive applications will address the following: WNTI goals and objectives, measurable results, collaboration and leverage resources, project reporting and acknowledgement.

#### **Grant Administration**

The applicant must complete basic project reporting at the project conclusion.

#### **Contact Information:**

Therese Thompson  
134 Union Blvd, Suite 665  
Lakewood, CO 80228  
Telephone: (303) 236-4402  
Email: [tthompson@westernnativetrout.org](mailto:tthompson@westernnativetrout.org)  
Website: <http://www.westernnativetrout.org/western-native-trout-initiative-small-grants-program/>

## **PPL MONTANA COMMUNITY FUND**

### **History**

This grant program is funded by the PPL and began in 2005, was developed to fund projects that promote education, environmental responsibility and economic development.

### **Purpose & Applicant Type**

The intent of the program, as it relates to dam and irrigation projects, is to promote environmental responsibility and economic development.

The funding is generally available to non-profits, though some funding has occurred to private ranches for improvements on properties in the past.

### **Funding Usage & Match Requirements**

Funds can be used for cost associated with design, construction and construction management.

No funding match is required, though larger projects that have secured matching funds or in-kind support are highly valued.

### **Project Eligibility**

Projects eligibility is not well defined and any projects that include the promotion of environmental responsibility and economic development are considered. The grant source was not developed specifically with dam and canal projects in mind.

### **Applications & Ranking Procedure**

There is a twice-yearly application period, with application deadlines variable. Grants are limited to a maximum of \$10,000. The total yearly allocation of funding to the program is generally around \$200,000. This is a competitive program with grants of all types competing against each other on a bi-yearly basis. Grants will be reviewed and awarded by the PPL Montana Community Fund Advisory Board.

### **Grant Administration**

Standard small grant practicing reporting is required.

#### **Contact Information:**

Lisa Perry, PPL Community Affairs  
Telephone: (406) 237-6914  
Email: lrperry@pplweb.com

## **MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ)**

### **Section 319 Contract**

#### **History**

This grant program, which is funded through DEQ under Section 319(h) of the Federal Clean Water Act (CWA), was created to provide funding assistance to restore quality in waterbodies whose beneficial uses are impaired by nonpoint source pollution (NPS) and whose water quality does not meet state standards.

#### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide contracts to restore water quality, generally in Watershed Restoration Plan (WRP) areas, which have been impaired by NPS (which may include polluted runoff, streambank erosion, high turbidity, loss of streambed vegetation/shading, etc.)

The funding is only available for governmental entities or non-profit organizations.

#### **Funding Usage & Cost Sharing**

Funds can be used for costs of design, construction, monitoring, and education and outreach activities. Funding cannot be used for; activities that implement requirements of a point source discharge permit, USGS gate stations, WRP development, baseline water monitoring, pollution source assessment and watershed characterization studies.

Applications must provide at least 40% of total project costs from non-federal sources, either private, state, local, non-profit, cash or in-kind. Project sponsors cannot have more than two 319 active grant projects.

#### **Project Eligibility**

Eligible projects must address all of the following:

- Address nonpoint source pollution
- Address impairments identified on Montana List of Impaired Waters
- Implement goals and objectives from 2012 Nonpoint Source Management Plan
- Directly implement projects or activities identified in DEQ-accepted Watershed Restoration Plan

#### **Applications & Ranking Procedure**

Applications for the 319 program are a two step process, which consists of submittal and review of the project proposal form and submittal and review of the final project proposal form. The first submittal is typically due in late July, while the final project proposal is due in late September. Project applicants are competing against each other on a statewide basis. The total allocation of funding to the program is variable, but generally around \$900,000. The recommend range of requested funds is between \$50,000 and \$300,000 for on-the-ground activities. If the applicant has completed past 319 projects, performance on those will be considered. All evaluations will be completed by standard scoring sheets by the agency review panel, with final authority by the EPA. Selection of projects typically occurs in late spring. If selected, all projects must be complete within 3 years of contract signature.

**Contract Administration**

This funding source is administered as a contract, which is a legally binding agreement and includes oversight and expectations funds will only be utilized for specified approved items. Basic reporting requirements are required.

**Contact Information:**

Sarah Norman, MDEQ Water Quality Planning Bureau

Telephone: (406) 444-2478

Email: [snorman2@mt.gov](mailto:snorman2@mt.gov)

Website: <http://deq.mt.gov/wqinfo/nonpoint/319GrantInfo.mcp>

## **COLUMBIA BASIN WATER TRANSACTIONS PROGRAM**

### **History**

This program was developed in 2002 to address diminished stream flows in tributaries of the Columbia River and acquires water rights from landowners to enhance in-stream flows. Funding for the program is largely provided by Bonneville Power Administration and the program is managed by the National Fish and Wildlife Foundation (NFWF).

### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance, in the form of water rights allocation, to increase tributary flows for the primary benefit of ESA listed fish and other depressed fish stocks within the Columbia River Basin.

Applications must be submitted by a qualified local entity (QLE). In Montana, QLE's are: Trout Unlimited and the Clark Fork Coalition. Projects must occur within the Columbia River Basin. Significant upfront project investigation and commitment must occur prior to application submittal.

### **Funding Usage & Cost Sharing**

The purpose of the program is to purchase water rights to increase tributary flows. This may assist the applicant by providing additional funding, in the form of the money gained from water rights purchase, to complete their project.

No funding match is required, as the money received is for water rights purchase. However, project proposals that demonstrate collaborative efforts with entities and document cost sharing are highly valued. There is no maximum fund request; however, requests over \$500,000 must have an individual evaluation. Total project allocation is approximately \$2.2 million; with 70 percent allocated to anadromous fish species and 30 percent allocated to resident fish species.

### **Project Eligibility**

Eligible projects must address all of the following:

- Water rights to be secured are valid and verifiable
- Landowner/irrigation districts agreements are in place
- Secures water for in-stream flow where low flows are a limiting factor to fish survival
- Provides benefit to ESA listed species or other depressed native or wild fish
- Fully explores innovative new concepts
- Provides long term monitoring components and provides a watershed context
- Implement goals and objectives from 2012 Nonpoint Source Management Plan
- Directly implement projects or activities identified in DEQ-accepted Watershed Restoration Plan

### **Applications & Ranking Procedure**

There is a continuous application period, with application review deadlines typically three times a year, in early August, early November and early March. This is a competitive program with proposals competing against each other on a yearly basis. Proposals will be reviewed and awarded by the NFWF, with review by the technical advisory committee.

**Program Administration**

This funding source is administered as a contract, which is a legally binding agreement for the purchase of water rights, for the intent of increasing in-stream flows. Basic reporting requirements are required. Project funding occurs as reimbursement only.

**Contact Information (Qualified Local Entities):**

Trout Unlimited – Montana Water Project (Bozeman)  
321 W. Main Street, Suite 411  
Bozeman, MT 59715  
Telephone: (406) 522-7291  
Email: [lziemer@tu.org](mailto:lziemer@tu.org)  
Website: [www.montanatu.org](http://www.montanatu.org)

Clark Fork Coalition (Missoula)  
140 S. 4<sup>th</sup> Street West  
Missoula, MT 59801  
Telephone: (406) 542-0539  
Email: [andy@clarkfork.org](mailto:andy@clarkfork.org)  
Website: [www.clarkfork.org](http://www.clarkfork.org)

## **MONTANA DEPARTMENT OF COMMERCE (MDOC)**

### **Treasure State Endowment Program (TSEP) Construction Grant**

#### **History**

This grant program, which is funded by the MDOC with monies approved by the legislature, was created in 1992 to provide financial assistance to local infrastructure projects, including: drinking water, wastewater, sanitary and storm sewer, solid waste and bridge projects. The typical process is to first utilize the TSEP PER Grant, which is a \$15,000 grant with a \$15,000 match to prepare a PER for submittal along with the grant. This PER grant is not discussed further, utilize contact information below for more information.

#### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance with irrigation or dam projects associated with drinking water systems.

Applicants must be: incorporated cities, towns, counties, consolidated governments, tribes or county water/sewer/solid waste districts.

#### **Funding Usage & Cost Sharing**

Funds can be used for costs of engineering design, construction, project management and administration.

Applications must provide at least 50% of total project costs from public or private funds (other grants, loans, cash, in-kind, etc.)

#### **Project Eligibility**

The primary focus of the TSEP Grant program is to provide funding assistance to local infrastructure, which includes: drinking water, wastewater, sanitary and storm sewer, solid waste and bridge projects.

#### **Applications & Ranking Procedure**

Construction grant applications are accepted once every other year (in even years), typically in the first week of May. Project applicants are competing against similar types of infrastructure projects. The total allocation of funding to the program is variable and subject to legislature approval and allocation. The maximum grant allocation per application is \$750,000. Applications are evaluated, scored and ranked by TSEP based upon seven statutory priorities, which include: solving urgent and serious public health and safety, financial need (community), PER completeness, planning, investigation of other funding sources, job creation and local support.

#### **Grant Administration**

Standard reporting practices are required as shown in the TSEP project administration manual.

#### **Contact Information:**

Becky Anseth – TSEP Manager  
301 S Park Avenue  
Helena, MT 59601  
Telephone: (406) 841-2865  
Email: [banseth@mt.gov](mailto:banseth@mt.gov)  
Website: <http://comdev.mt.gov/TSEP/default.mcp>

**MONTANA DEPARTMENT OF COMMERCE (MDOC)**

**Community Development Block Grant (CDBG)**

**History**

This grant program, which is funded with federal monies from the U.S. Department of Housing and Urban Development (HUD), has been administered by the MDOC since 1982. It provides assistance to community development needs including housing, public facilities and economic development.

**Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance for irrigation or dam projects associated with drinking water systems, which fall under the CDBG Competitive Public Facilities category of assistance.

Applicants must be: incorporated cities, towns, counties, consolidated governments or county water/sewer/solid waste districts.

**Funding Usage & Cost Sharing**

Funds can be used for cost of engineering design, construction, project management and administration. Applications must provide at least 25% of total project costs (match) from public or private funds (other grants, loans, cash, in-kind, etc.)

**Project Eligibility**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance associated with drinking water systems.

**Applications & Ranking Procedure**

Construction grant applications are accepted once every year, typical in late April. Project applicants are competing against all public facility grant applications within the state. The total allocation of funding to the program for public facilities is variable and generally between 3 and 5 million dollars. The maximum grant allocation per application is \$450,000. Applications are evaluated, scored and ranked based upon seven primary ranking criteria, which include: community planning, project need, technical design, community efforts, need for financial assistance, benefits to low/moderate income persons and implementation/management.

**Grant Administration**

Standard reporting practices are required as shown in the CDBG grant administration manual.

**Contact Information:**

Gus Byrom – Program Manager

301 S Park Avenue

Helena, MT 59601

Telephone: (406) 841-2770

Email: DOCCDBG@mt.gov

Website: <http://comdev.mt.gov/CDBG/default.mcp>

## **UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)**

### **Rural Development (RD) Grant & Loans**

#### **History**

This federal grant and loan program provides grant and loan assistance to construct, repair and improve water supply, water distribution systems, waste collections and waste treatment systems in rural areas and towns with populations up to 10,000 people.

#### **Purpose & Applicant Type**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance associated with water supply and water distribution systems. Funding assistance may be in the form of long-term, low interest loans and, if funds are available, grants to keep user costs reasonable. Loans have up to a 40-year payback period with a fixed interest rate based on the need of the project and median household income of the area served. Projects may fall under two different funding programs; water & waste disposal and community facilities.

Applicants must be public entities, Tribes and nonprofit corporations with projects located in rural areas and towns up to 10,000 in population.

#### **Funding Usage & Cost Sharing**

Funds can be used for costs of construction of drinking water sourcing, treatment, storage and distribution. No funding match is required. In some cases, funding may be available for engineering fees, land acquisition and other costs determined necessary for project completion.

#### **Project Eligibility**

The intent of the program, as it pertains to dam and irrigation projects, is to provide funding assistance associated with drinking water sourcing and storage. An accepted Preliminary Engineering Report (PER) and environmental clearance is required for funding establishment.

#### **Applications & Ranking Procedure**

Grant and loan applications are accepted anytime, with funding allocated yearly. Project applicants are competing against all projects throughout the state, though past funding allocations have not had excess applicants. The total allocation of funding to the program is variable and dependent upon congress allocation. There is no maximum allocation of grant/loans per applicant, though most allocations are for loans. Interest rates are competitive. Median household income of community and utilized water rates is a major evaluation.

#### **Grant and Loan Administration**

Standard reporting practices are required by the RD program.

#### **Contact Information:**

USDA – RD – Staff Office  
Telephone: (406) 585-2580  
Email: [DOCCDBG@mt.gov](mailto:DOCCDBG@mt.gov)  
Website: <http://www.rd.usda.gov/mt>

**WATERSHED GROUPS (CLARK FORK COALITION, ETC.), TROUT UNLIMITED, AND DUCKS UNLIMITED**

Often, these groups are involved from the ground floor and provide grant management assistance and occasionally provide funding assistance on a case-by-case basis.

**OTHER POTENTIAL GRANT/LOAN SOURCES**

Other potential funding sources, though not utilized often for larger scale dam and irrigation projects are:

- National Fish and Wildlife Foundation (NFWF) - Environmental Solutions for Communities
  - Competitive grant program to restore, sustain and enhance fish, wildlife, and habitats
- Montana Department of Agriculture – Growth Through Agriculture (GTA) Program
  - Grant/loan program to diversify and strengthen Montana agricultural industry.
- Wyss Foundation Grants
  - Private grant foundation focusing on land conservation
- Montana Department of Justice – Natural Resource Damage Program (NRDP)
  - Previously utilized grant system no longer operational. The NRDP will provide funding assistance to projects located within damaged/impaired areas in the Clark Fork Basin.
- Coca Cola Foundation
  - Grant program focusing on water stewardship